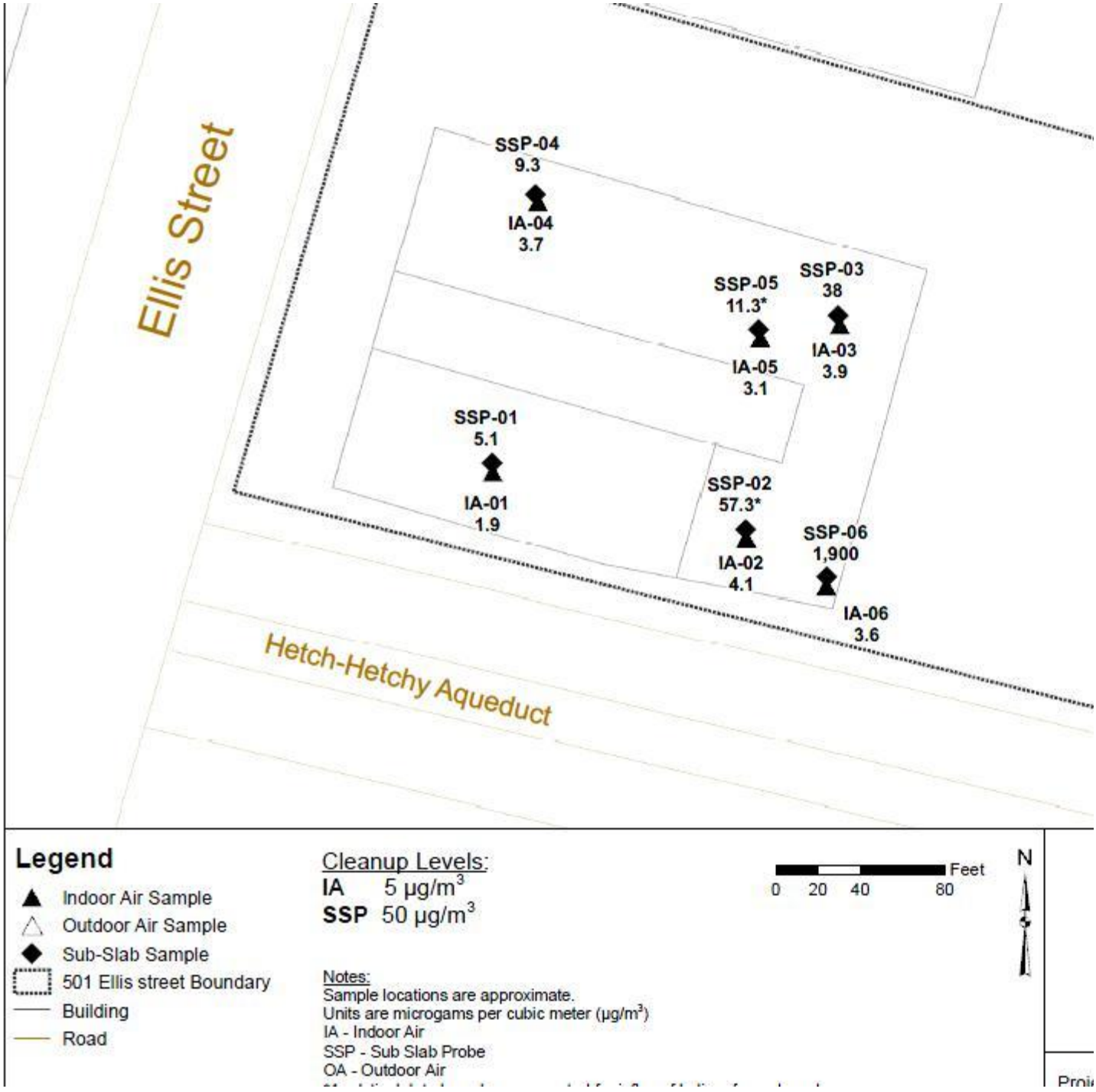
MORASH, MELANIE

From: Plate, Mathew
Sent: Wednesday, October 23, 2013 1:44 PM
To: MORASH, MELANIE
Subject: MEW NEC report - sub-slab data
Attachments: 501 Ellis St VI Assessment Report_2012 12 21.pdf

The original source area is near location 6. Note that the sub-slab concentration drop off significantly away from the source.


Ellis Street
Hetch-Hetchy Aqueduct
SSP-04
9.3
IA-04
3.7
SSP-05
11.3*
IA-05
3.1
SSP-03
38
IA-03
3.9
SSP-01
5.1
IA-01
1.9
SSP-02
57.3*
IA-02
4.1
SSP-06
1,900
IA-06
3.6
Legend
Indoor Air Sample
Outdoor Air Sample
Sub-Slab Sample
501 Ellis street Boundary
Building
Road
Cleanup Levels:
IA 5 µg/m3
SSP 50 µg/m3
Feet
0 20 40 80
N
Notes:
Sample locations are approximate.
Units are microgams per cubic meter (µg/m3)
IA - Indoor Air
SSP - Sub Slab Probe
OA - Outdoor Air

Prepared for

Renesas Electronics America, Inc.
2880 Scott Blvd, M/S SC3300
Santa Clara, CA 95050

RESULTS OF SUMMER 2012 INVESTIGATION OF POTENTIAL VAPOR INTRUSION PATHWAY AND RESPONSE ACTION WORK PLAN

501 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

Prepared by

Geosyntec consultants

engineers | scientists | innovators

1111 Broadway, 6th Floor
Oakland, California 94607

Project Number: WR0434A

21 December 2012

Results of Summer 2012 Investigation of Potential Vapor Intrusion Pathway and Response Action Work Plan

501 Ellis Street
Mountain View, California

Prepared by

Geosyntec Consultants, Inc.
1111 Broadway, 6th Floor
Oakland, California 94607

Jacquelyn Lanzon, P.E.
Project Engineer

Eric Suchomel, P.E.
Project Engineer

Project Number: WR0434A
21 December 2012

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1. INTRODUCTION

This report describes and presents results of the Summer 2012 indoor and outdoor air and sub-slab soil vapor sampling at 501 Ellis Street in Mountain View, California (the "Site", Figure 1). Geosyntec Consultants, Inc. (Geosyntec) prepared this report on behalf of Renesas Electronics America, Inc. (Renesas), formerly NEC Electronics America, Inc. (NEC).

1.1 Background of Renesas Submittal and Approval for Vapor Intrusion Pathway Evaluation

The United States Environmental Protection Agency (EPA) issued its Record of Decision (ROD) Amendment for the Vapor Intrusion Pathway for the Middlefield-Ellis-Whisman (MEW) Superfund Study Area on 16 August 2010[1]. Amendment 91-4A to the Administrative Order[2] directs the MEW parties to conduct vapor intrusion work activities in accordance with the Vapor Intrusion Remedial Design and Remedial Action Statement of Work (SOW)[3]. Among other things, the SOW defines a tiering system to determine vapor intrusion response actions for individual facilities within MEW and describes the vapor intrusion work activities to be performed.

Indoor and outdoor air samples were previously collected at the Site between 2003 and 2005 and the results have been reported to EPA[4]. However, the samples collected during that time were collected with the building HVAC system either operating or partially operating, and are not sufficient for determining a response action tier as defined in the SOW. Therefore, supplemental data were needed to select a response action tier for the building at 501 Ellis Street.

Pursuant to Section 2.2.2 of the SOW, Haley & Aldrich, Inc. prepared the Draft Site-Wide Vapor Intrusion Sampling and Analysis Work Plan for Response Action Tiering for the Middlefield-

[1] EPA Region IX, 2010. Record of Decision Amendment for the Vapor Intrusion Pathway, MEW Superfund Study Area, Mountain View and Moffett Field, CA. 16 August.
[2] EPA Region IX, 2011. Amendment 91-4A to Administrative Order, Docket Number 91-4, Remedial Design and Remedial Action of the MEW Site Vapor Intrusion Remedy. 16 September.
[3] EPA, 2011. Statement of Work, Remedial Design and Remedial Action to Address the Vapor Intrusion Pathway, MEW Superfund Study Area, Mountain View and Moffett Field, CA. September. (included as Attachment 4 to the ROD Amendment)
[4] Geosyntec, 2005. Results of December 2004 and January 2005 Indoor and Outdoor Air Sampling, 501 Ellis Street, Mountain View, California. 14 April.

Ellis-Whisman (MEW) Superfund Area (Draft Tiering Work Plan)[5], which was submitted to EPA on 29 September 2011. EPA is presently reviewing the Draft Tiering Work Plan.

In June 2012, Geosyntec learned that the building at 501 Ellis Street would be vacated and undergo renovation, which presented an opportunity to collect soil vapor and indoor air samples while the building was unoccupied and the building slab was exposed. Following discussion with the building owners and EPA representatives, Geosyntec prepared a work plan to evaluate the potential vapor intrusion pathway at 501 Ellis Street, consistent with the SOW and the Draft Tiering Work Plan[6]. The EPA conditionally approved the Work Plan on 20 July 2012, provided that Renesas collect one additional sub-slab soil vapor sample that was requested by EPA.

Geosyntec performed the field activities described in the Work Plan from 23 July through 5 August 2012. The main objective of the work was to evaluate the potential presence of a vapor intrusion pathway at the Site. Six sub-slab soil vapor probes (SSPs) were installed beneath the Site building slab and soil vapor samples were collected and analyzed for volatile organic compounds (VOCs) by EPA Method TO-15 with a project-specific analyte list including the constituents of concern (COCs) that have been identified at MEW. One ambient (outdoor) air (OA) and six indoor air (IA) samples were also collected and analyzed for the same suite of parameters. Indoor air samples were co-located with sub-slab samples. The results are discussed herein, and a plan for future work at the Site is also presented.

1.2 Report Organization

The remainder of this report is organized as follows:

- Section 2 – Project Description, describes the Site location, current Site conditions, and the scope of the sampling program for the Site.
- Section 3 – Summer 2012 Investigation, describes the investigation activities, sample locations, and procedures for sample collection and analysis.
- Section 4 – Results, includes a data quality review, presentation of results, and comparison of the results to risk levels.
- Section 5 – Recommended Response Actions, presents the scope, details, and schedule for recommended follow-up work.

---

[5] Haley & Aldrich, 2011. Draft Site-Wide Vapor Intrusion Sampling and Analysis Work Plan for Response Action Tiering, Vapor Intrusion Study Area, Middlefield-Ellis-Whisman Superfund Area, Mountain View, California. 29 September.

[6] Geosyntec, 2012. Final Work Plan to Evaluate the Potential Vapor Intrusion Pathway – 501 Ellis Street, Mountain View, California. 18 July.

Tables, figures, and appendices are presented following the report text.

2. PROJECT DESCRIPTION

2.1 Site Location

The Site is located at 501 Ellis Street in Mountain View, Santa Clara County, California (Figure 1). San Francisco Bay is approximately two miles to the north, and the Santa Cruz Mountains are approximately six miles to the south. The property is approximately 2 acres in size, consisting primarily of a building on the west and a paved open area on the east. The single-story building occupies about 28,000 ft^2 of the western portion of the property. The building was constructed in about 1967, with slab-on-grade construction and no basement.

The area bounded by Middlefield Road, Ellis Street, Whisman Road, and U.S. Highway 101 in Mountain View includes past and present locations of several semiconductor and other manufacturing and industrial facilities, including the subject Site. Since 1981, numerous previous investigations at the properties within MEW have been conducted and extensive soil and groundwater remedial activities have been implemented at many of those properties.

2.2 Site Conditions

From 1968 to 1978, Electronic Arrays Corporation used the Site to manufacture semiconductor devices and related components. Solvents and other chemicals were used in the manufacturing process. From 1978 until April 1984, NEC (now Renesas) operated at 501 Ellis Street.

In 1982, NEC initiated a groundwater monitoring and soil sampling program in response to the California Regional Water Quality Control Board (RWQCB) investigation of all companies using underground chemical tanks in their production processes before 1 January 1975. Between 1982 and 1990, NEC completed several site investigations which identified detectable concentrations of some VOCs, primarily trichloroethene (TCE), in the soil and groundwater beneath the site.

On 6 September 1991, NEC submitted to EPA a proposed final remedial design for VOCs in unsaturated soils located behind the building at 501 Ellis Street. Treatment technologies for shallow unsaturated soils at MEW are specified in the MEW ROD, issued by EPA in May 1989, and consist of removal and aeration or in-situ vapor extraction. NEC elected to excavate and send offsite for treatment, shallow soils with TCE concentrations greater than the cleanup level

of 0.5 milligrams per kilogram (mg/kg). NEC received EPA approval of its soil investigations and remediation at the Site in 1995[7].

In October 1997, NEC began operating the Source Control Groundwater Remediation (SCGWR) System at 501 Ellis Street. The SCGWR system consists of a groundwater extraction and treatment system that was designed to control, contain, and extract VOCs in groundwater at the Site and to complement the regional groundwater remediation program for the MEW area. The SCGWR system has been continuously operational since start-up in October 1997. On 13 May 2009, the modifications to the SCGWR system recommended in the 2008 Optimization Evaluation[8] were completed. These modifications included ceasing extraction from one of the three extraction wells and converting the system from carbon treatment followed by discharge to Stevens Creek under an NPDES permit to direct discharge of untreated groundwater to the sanitary sewer for treatment at the Palo Alto RWQCP under a City of Mountain View wastewater discharge permit.

Since startup in 1997, the average daily processing rate of the SCGWR system has been approximately 6,580 gallons per day or 4.6 gallons per minute (gpm) from 3 extraction wells. Since system optimization in 2009, the average daily processing rate has been 3.8 gpm.

Approximately 1.85 pounds of VOCs were removed by the SCGWR system in 2011. The total mass of VOCs removed by the treatment system from start-up through 12 December 2011 is approximately 42.8 pounds.

Renault & Handley Employees Investment Co. (Renault & Handley) currently owns the Site. The building at 501 Ellis Street is currently vacant and undergoing renovation.

2.3 Overview of Prior Air Sampling at the Site

Indoor and outdoor air samples were collected at the Site four times from 2003 to 2005. Sampling events in Spring 2003, Fall 2003, Winter 2004, and Winter 2005 were conducted with the building HVAC system either operating or partially operating, and as such are not sufficient to determine a response action tier as defined in the ROD agreement. In advance of the Summer 2012 investigation, the Site's HVAC system, including air conditioning units and ventilation, was turned off and remained off throughout the sample collection. On 24 July 2012, a representative of the property management group confirmed that the HVAC system was not

[7] EPA, 2009. Final Second Five-Year Review Report for Middlefield-Ellis-Whisman (MEW) Superfund Study Area, Mountain View, California. September.
[8] Geosyntec Consultants, 2008. Optimization Evaluation, 501 Ellis Street, Source Control Groundwater Remediation System, Mountain View, California. 3 September.

operating. However, it is likely that the HVAC was turned off prior to that date, when the building was vacated.

3. SUMMER 2012 INVESTIGATION

3.1 Building Walkthrough

A building walkthrough was performed 23 July 2012 to identify and document potential indoor VOC sources and potential preferential pathways for VI (e.g., cracks in the slab or features such as piping or conduits that penetrate the slab). During the walkthrough, five paint cans on the countertop in the northwestern portion of the building were identified as the only potential indoor VOC source. The cans were left in place since they appeared to be well sealed, and since total VOCs were not detected in the vicinity of the cans when measured with a photoionization detector (PID). In addition, the following potential preferential pathways were identified:

- Floor drains were identified in the restrooms.
- A sewer cleanout was identified, located to the north of the restrooms along the dividing wall on the eastern side of the building. The cleanout was well sealed and is not considered to be a potential preferential pathway.
- A fire sprinkler test drain was identified in the server room.
- A number of minor cracks or holes in the slab were identified throughout the building.
- Gaps in the slab were observed at the fire water supply pipe in the northwestern part of the building.
- Two 4-inch diameter plastic pipes, originally intended to carry networking cables, were observed to penetrate the floor in the southeastern-most room at the Site.

Observations from the building walkthrough are summarized on the Commercial Building Survey, provided as Appendix A. Photographs of pertinent observations are included as part of the project photo log in Appendix B.

3.2 Conduit and Crack Sealing

On 25 and 26 July 2012, the potential preferential pathways identified during the building walkthrough were mitigated as follows:

- The minor cracks and holes in the slab were sealed in place with Pro's Sealant Titebond Concrete Joint Sealant (material safety data sheet (MSDS) provided as Appendix C).

- The gaps in the slab at the fire water supply pipe in the northwestern part of the building were filled with RapidSet Very Rapid Hardening Concrete.

- The two plastic conduits in the southeastern-most room at the Site were capped in place. A plastic cap was screwed in to the existing thread on the end of the empty conduit. For the conduit with cables running through it, a fitting to narrow the opening was attached. Foam sealant (Dow's Great Stuff Insulating Foam Sealant, Big Gap Filler) was then applied liberally inside the fitting to fill the remaining gap.

Conduit and crack sealing was performed by American Integrated Services, Inc. (AIS) of Fairfield, California under the direction of Geosyntec. A photo log of pertinent observations is included in Appendix B.

3.3 Indoor and Outdoor Air Sampling

Indoor air (IA) and outdoor air (OA) samples were collected on 2 August 2012, prior to collecting the sub-slab soil vapor samples. Samples were collected using individually-certified 6-liter Summa™ canisters equipped with 5-micron filters and flow controllers calibrated to collect a 10-hour time integrated sample. The Summa™ canisters were placed 3 to 5 feet above the ground surface at locations which were adjacent to the corresponding SSP location, with the exception of sample IA-05. Sample IA-05 was collected from within the server room. The corresponding SSP-05 was located in the open area outside of the server room, in order to avoid damaging the tiled flooring during SSP installation. The outdoor sample was collected near the eastern property boundary. Indoor and outdoor air sample locations are shown on Figure 2. Temperature loggers were placed adjacent to each indoor air sample to record the temperature in the building. Another temperature logger was placed adjacent to the outdoor air sample to record outside temperature. The loggers collected temperature data every 5 seconds over the 10-hour sampling duration, as shown in Figure 3.

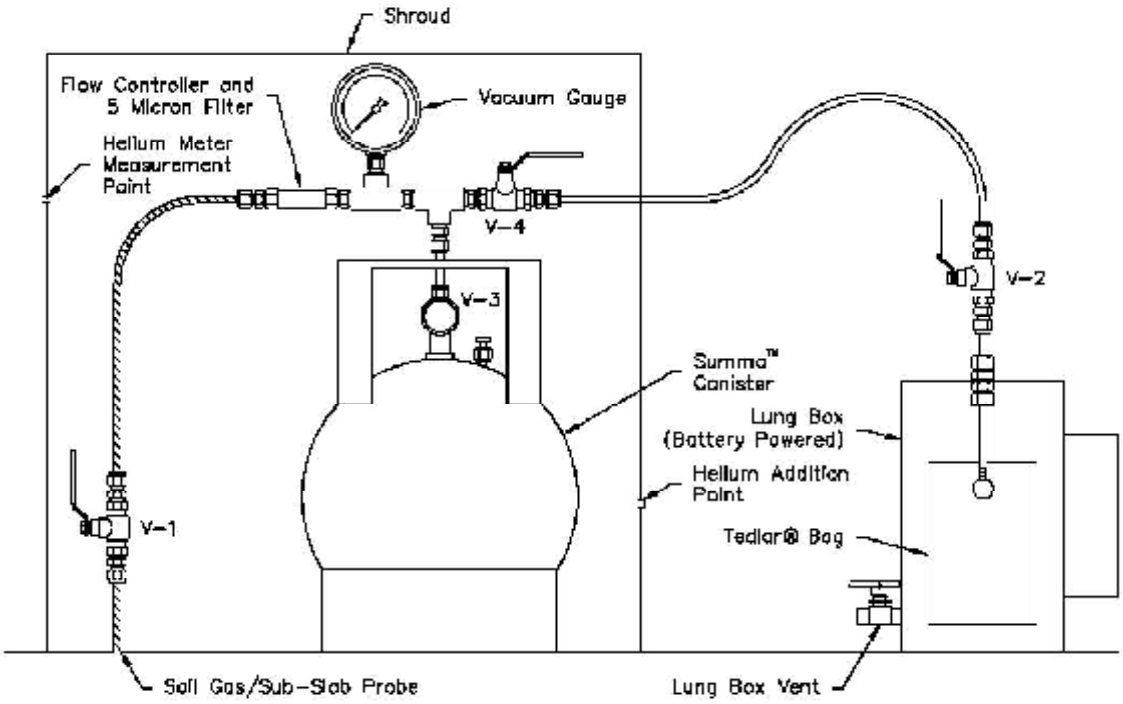
3.4 Sub-Slab Soil Vapor Sampling

A total of six temporary SSPs were installed at the Site on 30 July 2012 in order to evaluate potential transport routes for migration of subsurface vapors. The sub-slab probes were co-located with the indoor air sample locations, as presented in Figure 2. The SSP locations are also shown in the project photo log (Appendix B). EPA collected a pathway sample at the fire sprinkler test drain in the Server Room (PATH-FDRAIN) and split samples at locations SSP-01, SSP-03, SSP-05, and SSP-06. All EPA samples were analyzed at the EPA Region 9 laboratory.

During installation of the SSPs, core holes were drilled in the concrete floors using a heavy-duty electrical hammer-drill until the drill bit punctured the floor slab and entered the underlying granular fill materials. Drilling did not continue into the underlying geologic materials. A significant increase in the rate of the drill bit penetration or decrease in resistance signified when the bottom of each slab was punctured. Concrete dust generated during drilling was swept up during and after drilling. Upon completion of drilling, the sub-slab probe insert, which consists of a quarter-inch diameter brass threaded pipe fitted with a coupling and plug as shown in Figure 4, was installed and sealed promptly with swelling cement to minimize any potential air flow into or out of the drilled hole. Cement seals were allowed to set for four days before sampling.

After installation, a minimum of three liters of soil vapor were extracted from each probe to remove atmospheric air entrained during installation. Leak testing, purging, and sample collection were conducted as described below.

The soil vapor sampling equipment was assembled as shown in the schematic below. A Tedlar bag was attached to the tubing inside the lung box and the lid of the lung box was secured.



Soil Vapor Sampling Equipment Schematic.

A shut-in test was conducted to assess the potential for leaks in the above-ground fittings of the sample train between valves V-1 and V-2 in the above schematic prior to field screening and sample collection. A vacuum of up to 100 inches of water column (in-H_2O) was applied to the lines, and valves at both ends were shut to seal the vacuum in the lines. The vacuum was observed over 1 minute, and any visible change in pressure resulted in tightening of the fittings and a repeat of the test. This information was recorded in sampling logs, which were prepared for each location. Sampling logs are included in Appendix D.

Field screening was conducted following shut-in testing to characterize field parameters prior to sample collection for laboratory analysis. A Tedlar bag was filled, using a lung box, through a 200 milliliter per minute (mL/min) flow controller to confirm stabilized readings before sample collection. Field screening was conducted using a GEM-2000 landfill gas meter to measure oxygen (O_2), carbon dioxide (CO_2) and methane (CH_4) and a miniRAE 2000 PID for total VOCs.

Helium was used as a tracer gas during purging to provide additional assurance that no significant amount of atmospheric air entered the soil vapor sample through the annular seal between the ground surface and probe or any associated fittings. A shroud was placed around the ground surface of each soil vapor probe and sampling apparatus prior to sample collection, as shown in the graphic above, and helium gas was added to the shroud during the purging and field screening process. The concentration of helium in the shroud and in the purged volumes was measured with a MGD-2002 Helium Detector. In accordance with the Draft Tiering Work Plan, if the concentration of helium in the Tedlar bag was greater than 10% of the concentration in the shroud, the probe seal and fittings were checked to determine the location of the leak. Once the leak was stopped, purging and field screening was resumed.

The helium tracer testing confirmed the absence of leaks greater than 10% of the volume of the sample in all but two canisters. For samples SSP-02 and SSP-05, the percentage of leakage was approximately 16% and 30%, respectively, and could not be further reduced despite repeated efforts to identify leaks. For these samples, a correction factor was calculated using mass balance principles and the measured helium concentrations in the sample and the minimum average concentration in the shroud. The results of laboratory analysis for these samples was multiplied by the correction factor and presented as both uncorrected and corrected values.

Soil vapor samples were collected using batch-certified, 1-Liter (1-L) Summa™ canisters with 5-micron filters and 200 mL/min flow controllers. For all Summa™ canisters, the initial vacuum was measured and recorded prior to use to document that the canister had not leaked during shipment. At the end of the sampling period, the final vacuum was measured and recorded on both the field forms and the laboratory identification label. Following sample collection, the Summa™ canisters were shipped to the laboratory under chain-of-custody control at ambient

temperature. Upon receipt of the canisters at the laboratory, the vacuum was measured again to ensure that the canister did not leak during shipment. No significant canisters leaks were identified during shipment to or from the Site.

3.5 Sample Analysis

Eurofins Air Toxics Ltd., of Folsom, California, an ELAP-certified laboratory, analyzed the indoor and outdoor air and sub-slab soil vapor samples for tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), vinyl chloride (VC), 1,1-dichloroethane (1-1-DCA), and 1,1-dichloroethene (1,1-DCE) using EPA Method TO-15/TO-15 SIM, and helium using ASTM D-1946. Vapor concentrations of these compounds are reported in micrograms per cubic meter ($\mu g/m^3$) and parts per billion by volume (ppbv).

4. RESULTS

The Air Toxics laboratory report for the Summer 2012 investigation is provided in Appendix E. Analytical results from the Summer 2012 investigation are summarized in Table 1 (indoor and outdoor air results) and Table 2 (sub-slab results). Figure 5 shows the Summer 2012 results for TCE at each sample location.

4.1 Data Quality Review

Geosyntec performed a Stage 2A data validation of the analytical data received from Air Toxics. Overall, based on this data validation which covers the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. Qualified data should be used within the limitations of the qualification.

The organic data were reviewed based on USEPA guidance[9], the specifications of Appendix B of the Draft Tiering Work Plan, as well as by the pertinent methods referenced by the data package and professional judgment.

- Overall Assessment. The VOC and helium data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the project is 100%.

[9] USEPA, 2008. Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review. USEPA-540-R-08-01. June.

- Holding Times. The holding time for a vapor sample is 30 days from collection to analysis. The holding times were met for the sample analyses.

- Method Blanks. Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported with the VOC data. VOCs were not detected in the method blanks above the method detection limits (MDLs) for TO-15 SIM analysis and the reporting limits (RL) for TO-15 full scan analysis. One method blank was reported with the Helium data; Helium was not detected in the method blank above the RL.

- Laboratory Duplicate. Laboratory duplicates were not reported.

- Laboratory Control Sample (LCS). LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCS/LCS Duplicate (D) pairs were analyzed. The results for the LCS/LCSD pairs were within the laboratory specified acceptance criteria for recovery and relative percent difference (RPD).

- Surrogates. Acceptable surrogate recoveries were reported for the sample analyses.

- Sensitivity. The samples were reported to the MDLs. The RLs for VOCs met those specified by USEPA-540-R-08-01. A helium reporting limit was not specified by USEPA-540-R-08-01. Slight variations in the MDLs and RLs were reported with the data due to canister dilution.

- Field Duplicate. Two field duplicate samples, IA-DUP-01 and SSP-DUP-01, were collected with the samples for VOCs. Acceptable precision (RPD less than 30%) was demonstrated between the field duplicate and the original samples, IA-03 and SSP-02 with the exception of duplicate pair SSP-02/SSP-DUP-01 for VOCs. One sample had an estimated detection and the other sample indicated a non-detect result, resulting in all of the associated results being estimated or estimated less than the MDL. For Helium, unacceptable precision (RPD less than 30%) was demonstrated between the field duplicate and the original sample, SSP-02; therefore, the results for Helium should be regarded as estimated.

4.2 Indoor and Outdoor Air Sample Results

Results of temperature logging graphed on Figure 3 indicate that the HVAC system was not operating during sample collection, which was also confirmed by a building ownership representative. All temperature graphs are characterized by significant swings between higher and lower temperatures throughout the day, with a slight delay in response between outdoor and indoor temperature.

Indoor and outdoor air results were compared to site-specific Indoor Air Cleanup Levels (IACLs) (Haley & Aldrich, 2011). IACLs were not exceeded at any location.

The indoor and outdoor air results may be summarized as follows:

- TCE was detected in the outdoor air sample at a concentration of 1.1 μg/m^3 and in all of the indoor air samples at concentrations ranging from 1.9 to 4.1 μg/m^3.
- PCE was detected in the outdoor air sample at a concentration of 0.11 J μg/m^3 and in all of the indoor air samples at concentrations ranging from 0.074 J to 0.26 μg/m^3.
- 1,1-DCE was detected at IA-04 at a concentration of 0.050 J μg/m^3.
- Cis-1,2,-DCE was detected in the outdoor air sample at a concentration of 0.028 J μg/m^3 and in five of the indoor air samples at concentrations ranging from 0.012 J to 0.130 μg/m^3.
- Trans-1,2-DCE was detected in the outdoor sample at a concentration of 0.19 J μg/m^3 and in all of the indoor samples at concentrations ranging from 0.011 J to 0.03 J μg/m^3.
- 1,1-DCA and VC were not detected in any indoor air samples above their respective reporting limits.

4.3 Sub-Slab Soil Vapor Sample Results

Sub-slab soil vapor and fire sprinkler test drain results were compared to sub-slab screening levels developed based on indoor air screening levels and an attenuation factor of 0.1, per EPA guidance, and 0.05, per California Department of Toxic Substances Control (DTSC) guidance.[10,11]

The sub-slab soil vapor and fire sprinkler test drain results may be summarized as follows:

- 1,1-DCA, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride were not detected in any of the soil vapor samples collected by Geosyntec and the EPA.
- cis-1,2-DCE and trans-1,2-DCE were detected in the fire sprinkler test drain sample at concentrations of 30 μg/m^3.

---

[10] United States Environmental Protection Agency, 2012. Vapor Intrusion Screening Level Calculator User's Guide. March. Accessed 27 November 2012. http://www.epa.gov/oswer/vaporintrusion/documents/VISL_UsersGuide_v1.0_Nov2011RSLs.pdf

[11] Department of Toxic Substances Control California Environmental Protection Agency, 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.

- PCE was detected in the soil vapor samples at concentrations ranging from 7.4 to 300 μg/m^3. PCE concentration exceeded the sub-slab screening levels at location SSP-06.

- TCE was detected in soil vapor and floor drain samples at concentrations ranging from 5.0 to 1,900 μg/m^3. TCE concentrations exceeded the screening levels at location SSP-06, and at the fire sprinkler test drain. TCE concentrations at SSP-02 slightly exceeded the EPA-based screening level (attenuation factor of 0.1), but did not exceed the DTSC-based screening level (attenuation factor of 0.05).

5. SITE TIERING AND RESPONSE ACTION RECOMMENDATIONS

Results from this sampling event categorize the building at 501 Ellis Street as Tier 3A at the present time (i.e., a building with indoor air concentrations below indoor air cleanup levels, but greater than outdoor concentrations). Although Tier 3A requires a response action of developing and implementing a long-term monitoring plan and implementing institutional controls (ICs), the following additional work is recommended, for the reasons provided below.

- Install and operate a temporary soil vapor extraction (SVE) system in an effort to reduce sub-slab soil vapor concentrations in the southeast corner of the building, near sub-slab soil vapor sample location SSP-6. Operation of a temporary SVE system may lead to a decrease in sub-slab soil vapor concentrations in this area. Installation and operation of the SVE system are described in more detail in Sections 5.2 through 5.3 of this report. Construction drawings are also provided as Appendix F.

- Install a lockable watertight expandable gasket plug in the fire sprinkler test drain in the server room to seal the drain. During indoor air sampling investigations conducted in 2003, the fire sprinkler test drain was identified as a potential vapor migration pathway[12]. In January 2004, an expandable gasket plug was placed in the drain and a sign was chained to the drain discharge pipe stating that the plug should remain in the drain at all times, except when testing the fire sprinkler. Testing conducted after the plug was placed showed that the potential vapor migration pathway was successfully mitigated. During the summer 2012 sample event, EPA collected an unannounced pathway sample at the drain opening. The results showed TCE was detected at a concentration greater than the indoor air cleanup level (Table 2). Results for an indoor air sample collected nearby in the Server Room (IA-05) reported TCE was present below the indoor air cleanup level (Table 1). To mitigate potential vapor migration from the fire sprinkler test drain in the future, a new plug equipped with a lock will be placed in

[12] Geosyntec Consultants, 2004. Results Winter 2004 Indoor and Outdoor Air Sampling, 501 Ellis Street, Mountain View, California. 26 February.

the drain to prevent tampering. Building ownership representatives will be provided with a key or combination for the lock, which tenants will not have access to without permission.

5.1 SVE System Design and Installation

Renesas proposes to install a temporary SVE system in the southeast corner of the building, where elevated sub-slab vapor concentrations were observed at sample location SSP-06 (Appendix F, Sheet C-1). System components will include a 4-inch diameter shallow SVE well installed underneath the building to a depth of up to 6 feet below grade. The piping from the SVE well will extend to the south building wall in a floor trench, and will exit through the wall or beneath the building, where it will connect to the extraction system machinery via a 3-inch diameter pipeline (Appendix F, Sheet C-2). Extraction system machinery will include a liquid/vapor separator for removal of condensate/residual water, a blower for vapor extraction, and piping/instrumentation to control and monitor air flow (Appendix F, Sheet P-1). System equipment will be mounted on a 5 foot by 6 foot pallet, which may be placed at ground level or on the roof in accordance with preferences of the property management group. Since the total combined emissions predicted from operation of this SVE system is less than 1 pound per day (approximately 0.006 pounds per day), this SVE system will not require treatment of the extracted air with activated carbon.[13] Condensate/residual water removed by the liquid/vapor separator will be analyzed for VOCs and will be appropriately treated and/or disposed of via 1) discharge to the sanitary sewer in accordance with existing City of Mountain View Wastewater Discharge Permit #925; or 2) offsite via licensed waste handler. One vapor monitoring point will also be installed to a depth of up to 6 feet below grade to monitor subsurface VOC concentrations and SVE system vacuum (Appendix F, Sheet C-2, Detail 2). The vapor monitoring point will be connected to Nylaflow® tubing, which will run alongside the SVE well piping and terminate with a ball valve outside the building, such that samples may be collected from the outdoor SVE compound without entering the building.

Prior to construction, a Building Permit will be obtained from the City of Mountain View, and a Permit to Construct and Permit to Operate waiver will be obtained from the Bay Area Air Quality Management District (BAAQMD). The SVE system will be installed according to the 2010 California Building Code with Mountain View City Code amendments.

[13] Bay Area Air Quality Management District, 2005. Regulation 8, Rule 47, Section 113. Organic Compounds: Air Stripping and Soil Vapor Extraction Operations: Exemption, Air Stripping and Soil Vapor Extraction Operations Less Than 1 Pound Per Day. 15 June.

Details on the location and routing of system components may change during installation, as these will be further discussed and agreed upon with EPA and the property management group's input prior to system construction.

5.2 SVE System Monitoring

While operating, the SVE system shall be monitored as follows:

- **Startup sampling:**
  - Measurement of vacuum at the SVE well riser pipe (SVE-01) and vapor monitoring point (SP-01) to monitor the radius of influence (ROI) achieved by the SVE system;
  - Field screen SVE-01 and SP-01 for VOCs using a PID. Note that a ppbRAE shall be used to achieve lower detection limits/higher sensitivity; and
  - Collect VOC samples from SVE-01 and SP-01 for laboratory analysis, to confirm/correlate the VOC screening results.
- **Bi-Weekly (twice per month) monitoring (Months 1-3)**:
  - Inspect system, measure system vacuums, and field screen SVE-01 and SP-01 for VOCs using a PID.
- **Monthly monitoring (Months 4-6)**:
  - Inspect system, measure system vacuums, and field screen SVE-01 and SP-01 for VOCs using a PID.
- **Quarterly monitoring (Quarters 1 and 2, to be performed in concurrence with select monthly monitoring events):**
  - Collect VOC samples from SVE-01 and SP-01 for laboratory analysis, to confirm/correlate the VOC screening results. In accordance with the Draft Tiering Work Plan, three liters of air will be extracted from each sample port and field screened prior to sample collection.

The data will be used to demonstrate mass removal and to evaluate when to shut down the system. It is anticipated that the system will be shut down after 6 months of operation, or when VOC concentrations reach asymptotic levels.

The system will continue to be monitored after shutdown on a monthly basis via field screening of SVE-01 and SP-01 for VOCs using a PID. In the event that significant rebound (e.g., more than one order-of-magnitude) of VOC concentrations is observed, samples for laboratory

analysis will be collected to confirm the rebound and the SVE system may be restarted, upon concurrence of Geosyntec, Renesas, property management, and EPA.

If VOC concentrations do not rebound by more than one order-of-magnitude after 6 months of post-shutdown monitoring, samples will be collected from IA-06, SVE-01, and SP-01, analyzed for VOCs, and compared to the pre-shutdown data. If the analytical results indicate the VOC concentrations in vicinity of the SVE system have decreased, Geosyntec will recommend to EPA that the SVE system be decommissioned and removed from the Site.

Following system decommissioning, an additional round of sampling will be performed. The samples will be collected using the sampling methodology approved in the July 2012 "Work Plan to Evaluate the Potential Vapor Intrusion Pathway – 501 Ellis Street, Mountain View, California." The results will be used to update the response action tier for the building following operation of the SVE system.

5.3 Schedule

Once the response actions are approved, it will take one to two months to coordinate and complete the system installation, in accordance with the following general schedule:

- **Weeks 1-2 (commence upon receipt of EPA approval):**
  - Finalize construction plans;
  - Submit Building Permit application (including SVE system plans) to City of Mountain View;
  - Submit Permit to Construct application and Permit to Operate waiver request to BAAQMD; and
  - Solicit bids from Subcontractors for system construction.
- **Weeks 3-4:**
  - Receive bids and select Subcontractor; and
  - Receive permits and waiver approval.
- **Weeks 5-6 (commence upon receipt of permits and waiver approval):**
  - System construction and startup/shakedown testing.

SVE system monitoring, as described in Section 5.2, would commence upon startup in week 6.

5.4 Reporting

Informal progress reports, including significant milestone updates and interim results, will be provided to EPA periodically throughout construction, startup, and operation of the SVE system.

A final summary report will be prepared at the conclusion of the response action implementation and will include the following information:

- A summary of activities related to SVE system installation, including drawings showing the final system layout;
- Results of SVE system monitoring and post-operation rebound monitoring;
- Results of post-SVE sampling;
- An assigned building tier at the conclusion of SVE system operation based on the criteria described in Section 5.2; and
- A long-term monitoring plan for the building, if necessary based on the assigned building tier.

The summary report will be submitted to USEPA within 60 days of completion of confirmation sampling.

TABLES

TABLE 1
AMBIENT AIR ANALYTICAL RESULTS
501 Ellis Street
Mountain View, California

Location ID:	Indoor Air Cleanup Levels[1] ($\mu g/m^3$)	OA-01[2]	IA-01	IA-02	IA-03	IA-04	IA-05	IA-06
Lab Sample ID:		1208156AR 1-01A	1208156AR 1-02A	1208156AR 1-03A	1208156AR 1-04A	1208156AR 1-05A	1208156AR 1-06A	1208156AR 1-07A
Date Sampled:		8/2/2012	8/2/2012	8/2/2012	8/2/2012	8/2/2012	8/2/2012	8/2/2012
Units:		$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
TO-15 Volatile Organic Compounds								
1,1-Dichloroethane	6	0.15 U	0.13 U	0.13 U	0.13 U	0.14 U	0.13 U	0.14 U
1,1-Dichloroethene	700	0.075 U	0.066 U	0.065 U	0.063 U	**0.050** J	0.065 U	0.067 U
cis-1,2-Dichloroethene	210	**0.028** J	**0.026** J	**0.012** J	0.12 U	**0.020** J	**0.020** J	**0.130** U
Tetrachloroethene	2	**0.11** J	**0.074** J	**0.15** J	**0.17** J	**0.14** J	**0.17** J	**0.26**
trans-1,2-Dichloroethene	210	**0.019** J	**0.022** J	**0.030** J	**0.021** J	**0.011** J	**0.028** J	**0.03** J
Trichloroethene	5	**1.1**	**1.9**	**4.1**	**3.9**	**3.7**	**3.1**	**3.6**
Vinyl Chloride	2	0.048 U	0.042 U	0.042 U	0.040 U	0.043 U	0.042 U	0.043 U

Notes:

1. Haley & Aldrich, Inc. 2011. Site-Wide Vapor Intrusion Sampling and Analysis Work Plan for Response Action Tiering Middlefield-Ellis-Whisman Superfund Area, Mountain View, California and Moffett Field: Table V - Indoor Air Cleanup Levels for MEW Chemicals of Potential Concern - Commercial. 29 September.

2. Outdoor air is compared to indoor air results, not to non-residential indoor air cleanup levels.

$\mu g/m^3$ - micrograms per cubic meter

Bolded values represent compounds above laboratory reporting limit

U - undetected, associated value is the method reporting limit

J - Estimated value

PATH-FDRAIN (EPA) is a pathway sample collected at the fire drain in the Server Room and analyzed at EPA Region 9 laboratory.

TABLE 2
SUB-SLAB SOIL VAPOR ANALYTICAL RESULTS
501 Ellis Street
Mountain View, California

				TO-15 Volatile Organic Compounds						
	Lab Sample ID	Date	Units	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride
Screening Levels										
Sub-Slab Screening Levels[1]	-	-	(µg/m3)	60	7,000	2,100	20	2,100	50	20
Sub-Slab Screening Levels[2]	-	-	(µg/m3)	120	14,000	4,200	40	4,200	100	40
Sub-Slab Samples										
SSP-01	1208156B-09A	8/3/2012	(µg/m3)	2.9 U	2.9 U	2.9 U	4.9 U	2.9 U	**5.1**	1.8 U
SSP-01 (EPA)	1208013-01	8/3/2012	(µg/m3)	8 U	8 U	8 U	10 U	8 U	**5 C1, J**	5 U
SSP-02 Uncorrected*	1208156B-10A	8/5/2012	(µg/m3)	2.7 U	2.6 U	2.6 U	**8.0**	2.6 U	**48**	1.7 U
SSP-02 Corrected*	1208156B-10A	8/5/2012	(µg/m3)	3.2 U	3.1 U	3.1 U	**9.6**	3.1 U	**57.3**	2.0 U
SSP-2 DUP Uncorrected*	1208156B-15A	8/5/2012	(µg/m3)	2.9 U	2.8 U	2.8 U	**10**	2.8 U	**55**	1.8 U
SSP-2 DUP Corrected*	1208156B-15A	8/5/2012	(µg/m3)	3.5 U	3.3 U	3.3 U	**11.9**	3.3 U	**65.7**	2.1 U
SSP-03	1208156B-11A	8/3/2012	(µg/m3)	3.1 U	3 U	3 U	**7.4**	3 U	**38**	1.9 U
SSP-03 (EPA)	1208013-02	8/3/2012	(µg/m3)	8 U	8 U	8 U	**10**	8 U	**50**	5 U
SSP-04	1208156B-12A	8/5/2012	(µg/m3)	2.8 U	2.8 U	2.8 U	4.7 U	2.8 U	**9.3**	1.8 U
SSP-05 Uncorrected*	1208156B-13A	8/3/2012	(µg/m3)	2.9 U	2.8 U	2.8 U	4.8 U	2.8 U	**7.8**	1.8 U
SSP-05 Corrected*	1208156B-13A	8/3/2012	(µg/m3)	3.5 U	3.3 U	3.3 U	5.7 U	3.3 U	**9.3**	2.1 U
SSP-05 (EPA)	1208013-03	8/3/2012	(µg/m3)	8 U	8 U	8 U	10 U	8 U	**8 C1, J**	5 U
SSP-06	1208156B-14A	8/3/2012	(µg/m3)	3.9 U	3.8 U	3.8 U	**270**	3.8 U	**1,900**	2.5 U
SSP-06 (EPA)	1208013-04	8/3/2012	(µg/m3)	8 U	8 U	8 U	**300**	8 U	**1,800**	5 U
Pathway Sample										
PATH-FDRAIN (EPA)**	1208013-05	8/3/2012	(µg/m3)	8 U	8 U	30 U	10 U	30 U	**300**	5 U

Notes:
1 - Based on Indoor Air Screening Levels, using an attenuation factor of 0.1 per EPA's Vapor Intrusion Screening Level Calculator User's Guide (March 2012).
2 - Based on Indoor Air Screening Levels, using an attenuation factor of 0.05 per DTSC's Vapor Intrusion Guidance Document, Table 2, for the existing commercial building subslab scenario (October 2011).

* analytical data have been corrected for influx of helium from shroud.
**EPA lab report did not provide helium result, therefore this result is not corrected for influx of helium from the shroud.
Bolded values represent compounds above laboratory reporting limi
µg/m^3 - micrograms per cubic meter
U - undetected, associated value is the method reporting limit
J - The reported result for this analyte should be considered an estimated value
C1 - The reported concentration for this analyte is below the quantitation limit
SSP-01 (EPA), SSP-03 (EPA), SSP-05 (EPA), and SSP-06 (EPA) are co-located duplicate sub-slab sample analyzed at EPA Region 9 laboratory.
PATH-FDRAIN (EPA) is a pathway sample collected at the fire drain in the Server Room and analyzed at EPA Region 9 laboratory

FIGURES

Legend

501 Ellis Street

MEW Study Area

N

NOTE:
Boundaries are approximate.
Aerial Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

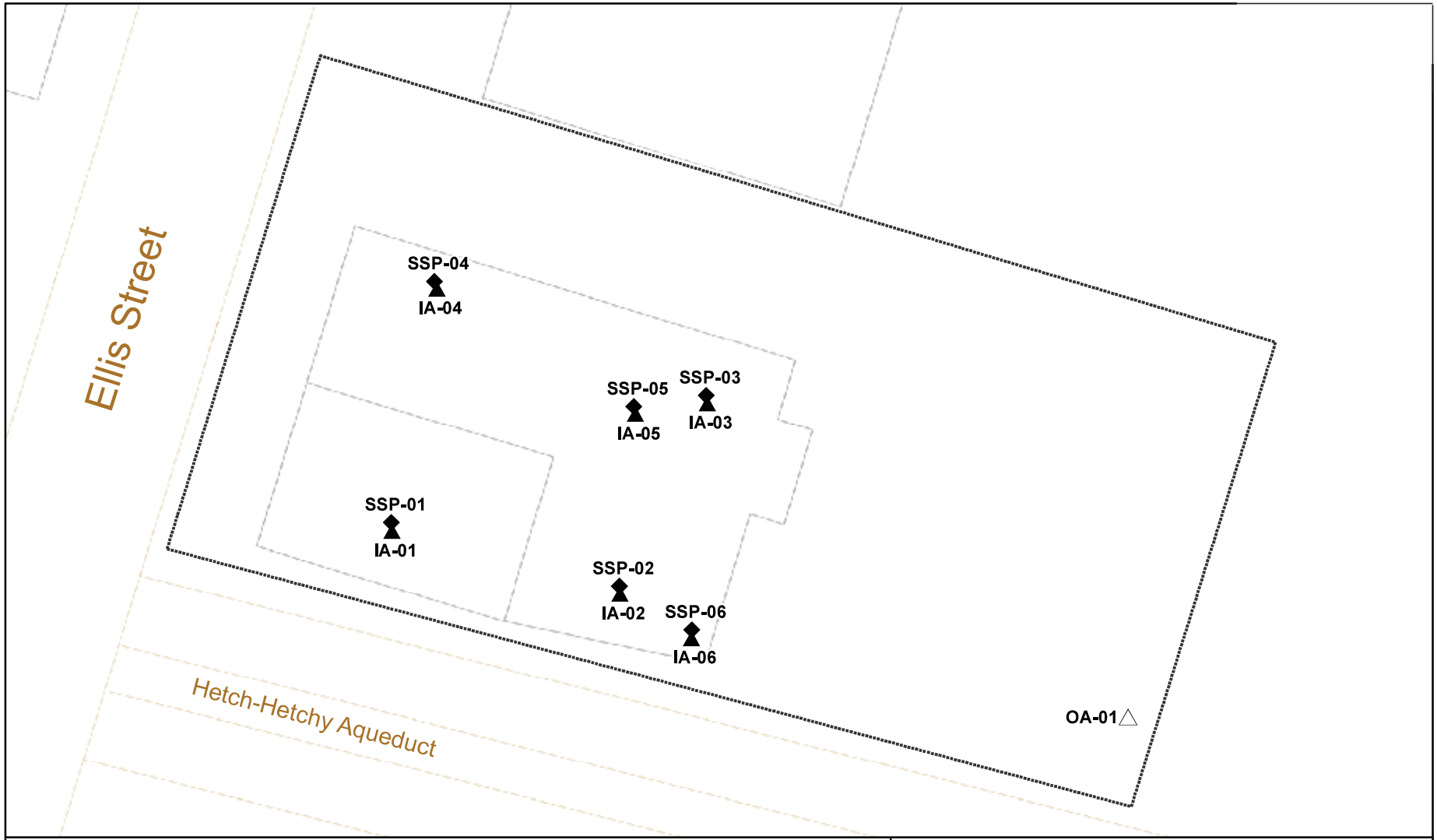
0 500 1,000 Feet

Figure 1
Site Location Map

501 Ellis Street
Mountain View, California

Project WR0434	December 2012	Geosyntec consultants

P:\GIS\NEC\Project\2012_SubSlab&IndoorAirSampling\F01_SiteMap.mxd



Legend

- Indoor Air Sample
- Outdoor Air (Roof) Sample
- Sub-Slab Sample
- 501 Ellis street Boundary
- Building
- Road

0 15 30 60 Feet

N

Note:
Sample locations are approximate.

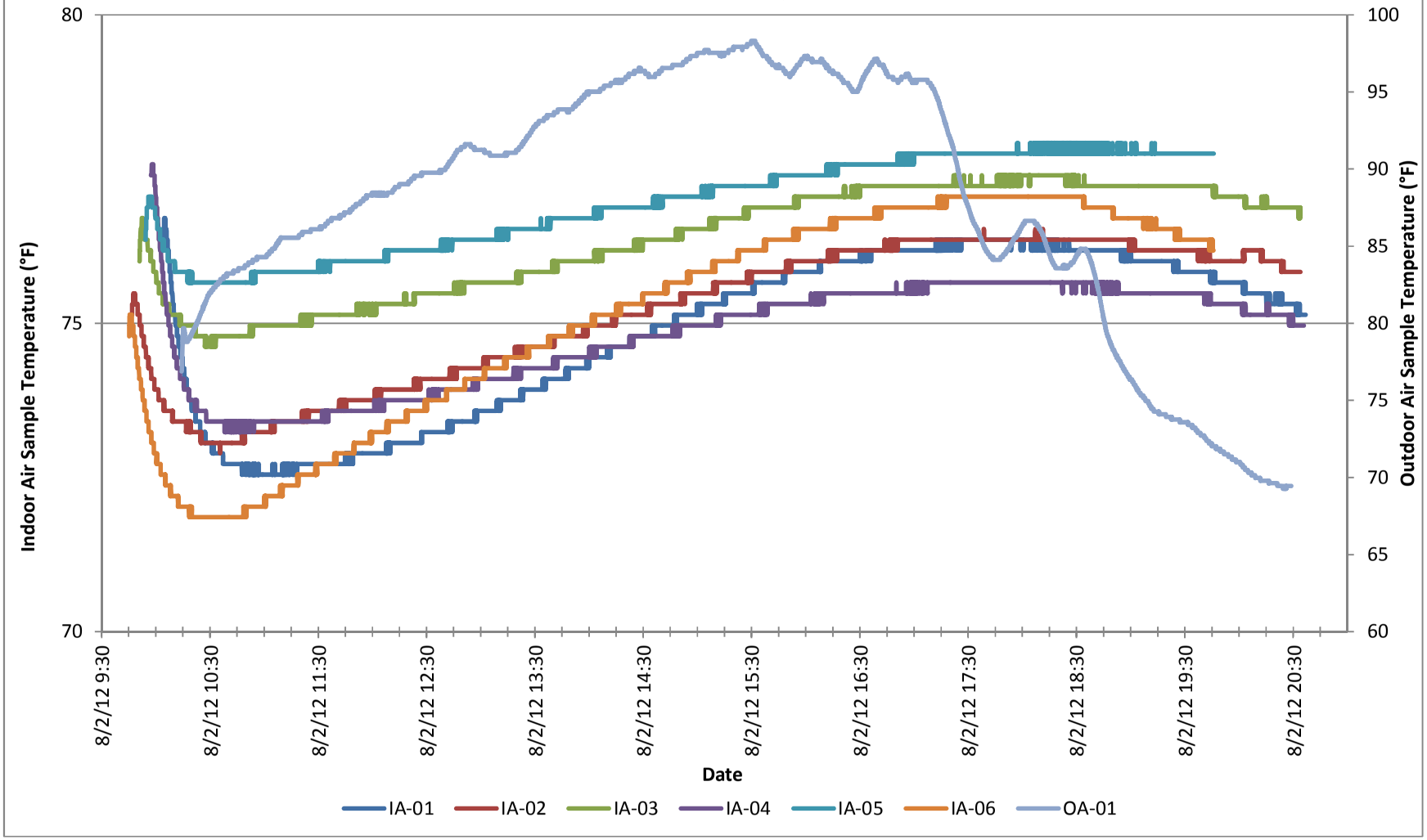
Figure 2
Summer 2012 Sub-Slab and Indoor Air Sampling Locations

501 Ellis Street
Mountain View, California

Project WR0434A	August 2012	Geosyntec consultants

P:\GIS\NEC\Project\2012_SubSlab&IndoorAirSampling\F02_SamplingLocations.mxd

Figure 3
Indoor and Outdoor Air Sample Temperatures
501 Ellis Street
Mountain View, California



P:\PRJ2003REM\NEC\WR0434\VI Pathway\2012 VI Work at 501 Ellis Street\Report\Figures\Figure 3 - Hobo Data.xls

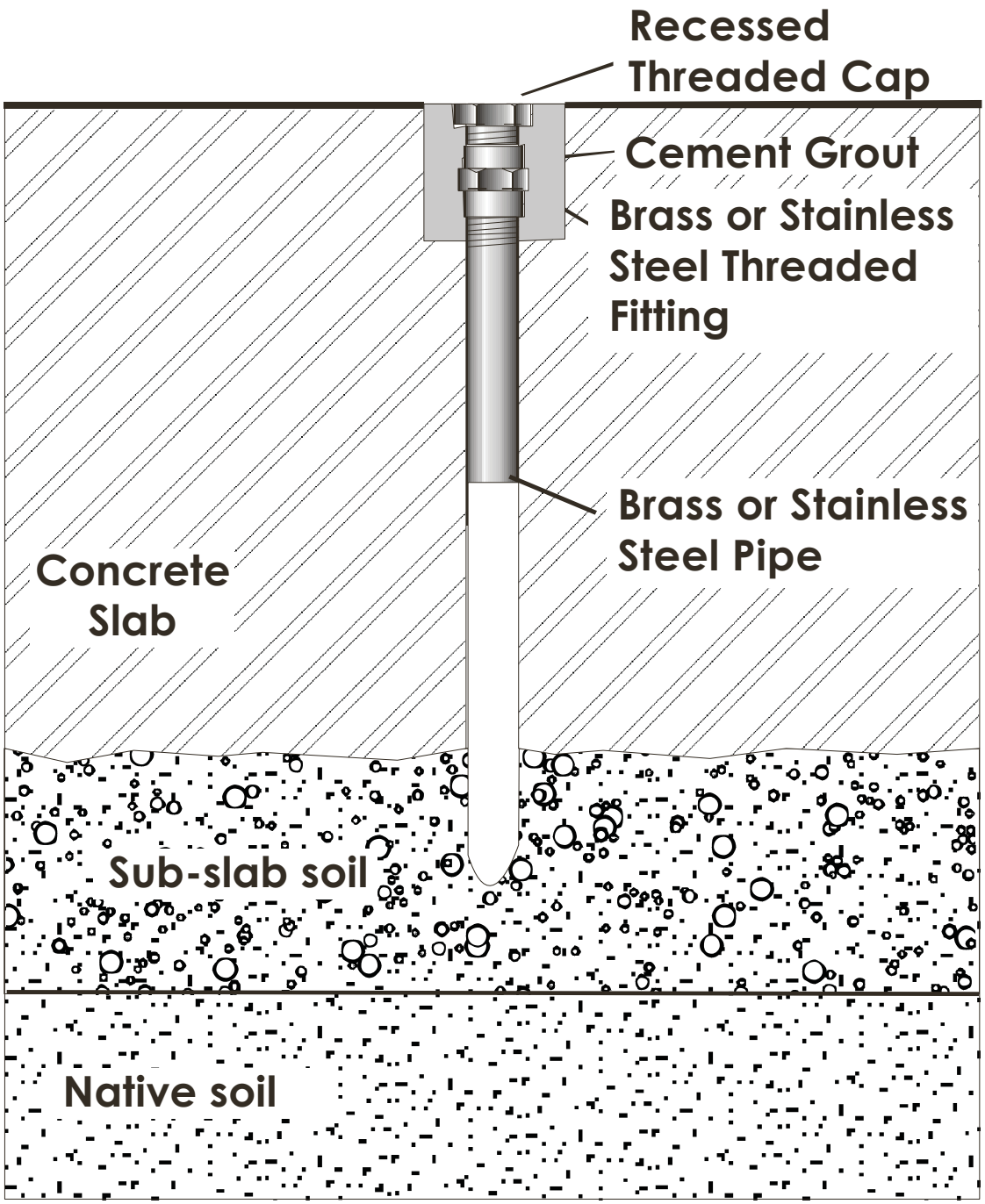
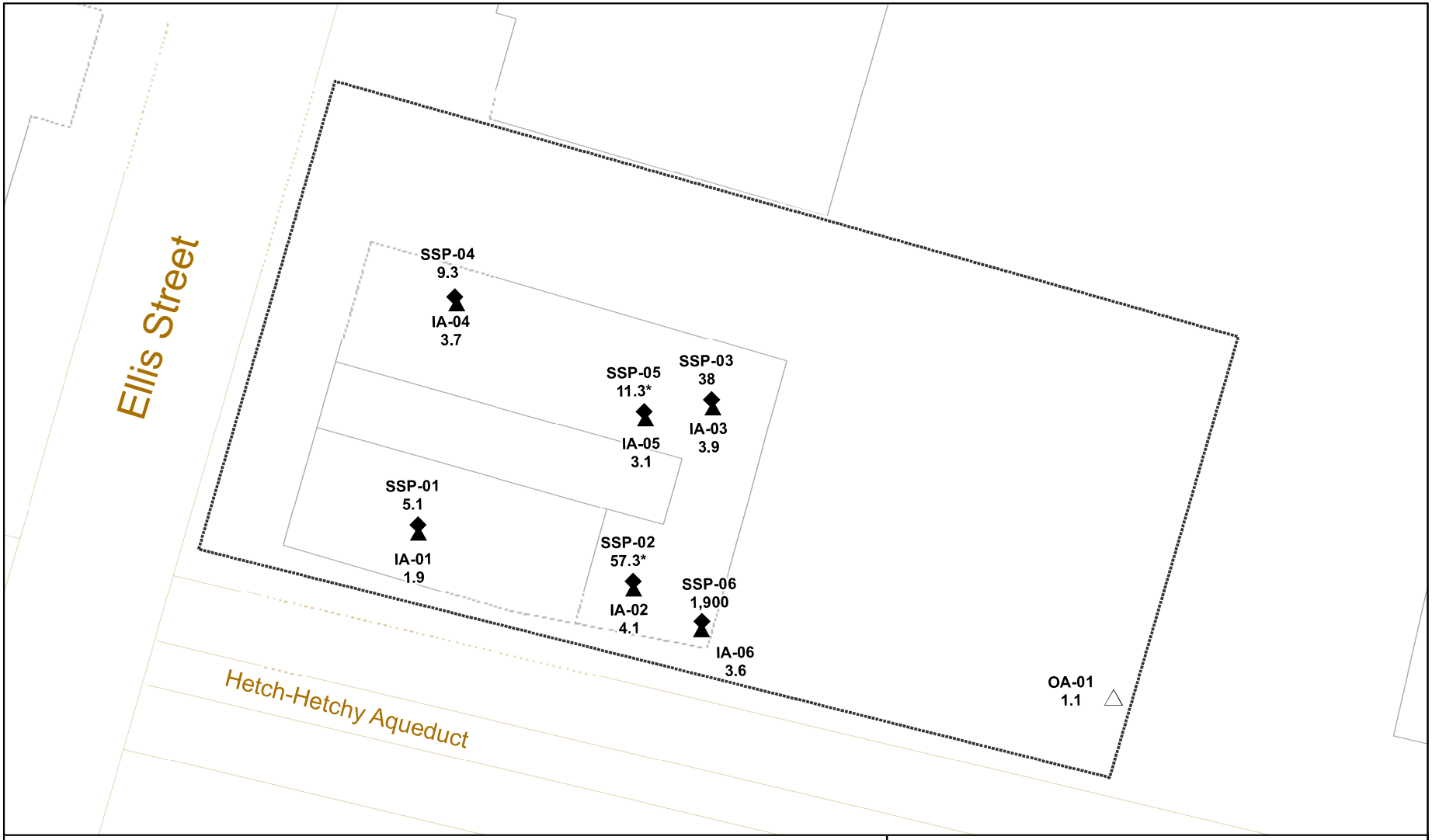


Figure 4
Sub-Slab Probe

501 Ellis Street
Mountain View, California

Project WR0434	December 2012	Geosyntec consultants

P:\GIS\NEC\AI\2012_SubSlab&IndoorAirSampling\F03_SubSlabProbe.ai



Legend

- Indoor Air Sample
- Outdoor Air Sample
- Sub-Slab Sample
- 501 Ellis street Boundary
- Building
- Road

Cleanup Levels:
IA 5 µg/m^3
SSP 50 µg/m^3

0 20 40 80 Feet

N

Notes:
Sample locations are approximate.
Units are microgams per cubic meter (µg/m^3)
IA - Indoor Air
SSP - Sub Slab Probe
OA - Outdoor Air
*Analytical data have been corrected for influx of helium from shroud

Figure 5
Sub-Slab and Indoor Air Trichloroethene Analytical Results

501 Ellis Street
Mountain View, California

Project WR0434A	August 2012	Geosyntec consultants

P:\GIS\NEC\Project\2012_SubSlab&IndoorAirSampling\F05_TCE_Results.mxd

APPENDIX A
Building Walk Through Survey

Geosyntec consultants

1111 Broadway, 6th Floor
Oakland, CA 94607
PH 510.285.2700
FAX 510.836.3114
www.geosyntec.com

COMMERCIAL BUILDING SURVEY

Survey Completed by: _____Jackie Lanzon_____

Date: ____23 July 2012_____Site Name:_____501 Ellis St_____

Part I: BUILDING INFORMATION

501 Ellis Street, Mountain View, CA 94043

Property Contact: David Conklin

Owner / Renter / other: Managing Broker for Renault & Handley (property owners)

Contact's Phone: home ( )_____ work (650) 461-2202

cell ( )_____

Building occupants: Adults _0_ Office Staff:_ 0 _ Non-office Staff:_ 0 _

Building is currently vacant

Part II: Building Characteristics

Building type: (Circle one) /office strip mall / commercial / industrial

Building Description:

Single story building, currently vacant. Offices/conference rooms located along outside walls, open interior formerly utilized for cubicle space or storage. One set of restrooms, one kitchen, and one sink.

Part II: OCCUPANCY

Is the lowest level occupied? (Circle one) Full-time, Occasionally, Seldom,

Almost Never NOTE: Occupancy would change to full-time when a tenant is retained

Geosyntec consultants

1111 Broadway, 6th Floor
Oakland, CA 94607
PH 510.285.2700
FAX 510.836.3114
www.geosyntec.com

- Level: General Use of Each Floor (e.g., office, storage, manufacturing)

1st Floor Office/warehouse space – currently vacant

Part III: CONSTRUCTION CHARACTERISTICS
(Circle all that apply)

a. Above grade construction: wood frame, (concrete,) stone, brick, steel

b. Floor: (concrete,) other _____

c. Concrete floor: unsealed, sealed, sealed with sealant status unknown, likely unsealed

d. Foundation walls: (poured,) block, stone, other _____

e. Foundation walls: unsealed, sealed, sealed with sealant status unknown, likely unsealed

f. Floor drains present? (Y) / N

i. Sump present? Y / (N)

j. Water in sump? Y / N / (not applicable)

- Lowest level depth below grade: __N/A__(feet)

- Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

Floor drains are located in the restrooms. A sewer cleanout is located to the north of the restrooms along the wall, on the eastern side of the building. Two conduits penetrate the slab in the southwest corner of the building. Cracks in the slab were identified, to be sealed later in the week.

- Type of ground cover around outside of building: (Circle one) grass / concrete / (asphalt) / (other) (specify)

Mulched areas with shrubbery around perimeter of the building.

Geosyntec consultants

1111 Broadway, 6th Floor
Oakland, CA 94607
PH 510.285.2700
FAX 510.836.3114
www.geosyntec.com

- Irrigation Present: (Circle one) (Yes) / Yes (but not used) / No:

Sprinkler system around the perimeter for landscaping.

- Is the building insulated? (Circle one) (Y) / N How air tight? Tight / (Average) / Not Tight: _Type of insulation is unknown_
- Age of building: __~45 years__
- Age of separate additions or expansion: None
- Describe location of any tunnels: _None
- Describe location of all load bearing walls (add to building diagram):

  Outer walls
- Does a gap exist between footing and floor slab: Yes/(No)_____
- Describe location of all roof support columns (add to building diagram):

Support columns located throughout the building at 40-ft spacing on center

- Describe location of all Isolation Piers (add to building diagram):

None known

Part IV: HEATING, VENTING and AIR CONDITIONING

*** Note – this section not completed since HVAC system is currently off. Refer to Winter 2005 Air Sampling Report for Taylor Engineering HVAC Report***

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation, Heat pump, Forced Air, Roof Top Units, Other

---

- The primary type of fuel used is:
- Natural Gas, Fuel Oil, Electric, Propane,

Geosyntec consultants

1111 Broadway, 6th Floor
Oakland, CA 94607
PH 510.285.2700
FAX 510.836.3114
www.geosyntec.com

- Hot water tanks fueled by: _____
- Boiler/furnace located in: Basement, Outdoors, Main Floor, Other_____
- Air conditioning: Central Air, Window units, Open Windows, None
- Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

_____

_____

_____

_____

_____

Building Ventilation:

- Bathroom exhaust fans present: _____
- Loading dock doors left open: _____
- size: _____ frequency:_____
- Manufacturing Process vents:_____
- Additional Building Vents:_____

Geosyntec consultants

1111 Broadway, 6th Floor
Oakland, CA 94607
PH 510.285.2700
FAX 510.836.3114
www.geosyntec.com

Part V – OUTSIDE CONTAMINANT SOURCES

List nearby land use: (industrial/commercial/residential?)

North : _Commercial/industrial_ South : _Commercial

West : _Commercial/residential East : __Commercial/residential

Other stationary sources nearby (gas stations, emission stacks, other manufacturing facilities, etc.): None

Heavy vehicular traffic nearby (or other mobile sources): _Highway 101 located approximately 1,500 ft to the north of the site

Geosyntec consultants

1111 Broadway, 6th Floor
Oakland, CA 94607
PH 510.285.2700
FAX 510.836.3114
www.geosyntec.com

Part VI – INDOOR CONTAMINANT SOURCES

Identify all potential indoor sources found in the building, the location of the source (floor &room)

Potential Sources Location(s)	Description:
On countertop in northwestern portion of the building, along the western partition wall	Paint cans

Geosyntec consultants

1111 Broadway, 6th Floor
Oakland, CA 94607
PH 510.285.2700
FAX 510.836.3114
www.geosyntec.com

Part VII – MISC. ITEMS

- Any known spills of a chemical immediately outside or inside the building? *Yes* / (*No*)
- Describe (with location): _____
- Have any pesticides/herbicides been applied around the building foundation or in the yard/gardens? *Yes* / (No)
- If so, when and which chemicals? _____

Part VIII: FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Are petroleum-powered machines or vehicles Y /(N) NA

b. Number and type of forklift used:_____

c. Has the building ever had a fire? Y /(N) Describe:_____

Geosyntec consultants

1111 Broadway, 6th Floor
Oakland, CA 94607
PH 510.285.2700
FAX 510.836.3114
www.geosyntec.com

Part IX: PRODUCT INVENTORY FORM

Make & Model of field instrument used: _MiniRAE PID_
List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading	Photo ** Y / N
On countertop in northwestern portion of the building, along the western partition wall	Paint cans	5 cans	U	Acrylic polymers, Nepheline Syenite, Water, Titanium dioxide, Silica (amorphous, precipitated and gel), Aluminum hydroxide, Clay (kaolin)	0.0	N

* Describe the condition of the product containers as Unopened (UO), Used (U), or Deteriorated (D)
** Photographs of the front and back of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

Geosyntec consultants

1111 Broadway, 6th Floor
Oakland, CA 94607
PH 510.285.2700
FAX 510.836.3114
www.geosyntec.com

ADDITIONAL BUILDING WALKTHROUGH NOTES:

APPENDIX B
Photo Log

Appendix B: Photographic Log
NEC – 501 Ellis Street, Mountain View, California

GEOSYNTEC CONSULTANTS Photographic Record	
Client: NEC	**Project Number:** WR0434A
Site Name: 501 Ellis Street	**Site Location:** Mountain View, CA

Photograph 1 **Date:** 7/23/2012 **Photo Description:** Cable conduits before sealing.	
Photograph 2 **Date:** 7/26/2012 **Photo Description:** Installation of foam sealant inside plastic cap for fiber optic cable conduits.	

Appendix B: Photographic Log
NEC – 501 Ellis Street, Mountain View, California

GEOSYNTEC CONSULTANTS Photographic Record	
Client: NEC	**Project Number:** WR0434A
Site Name: 501 Ellis Street	**Site Location:** Mountain View, CA
Photograph 3	
Date: 7/26/2012	
Photo Description: Plastic caps for fiber optic cable conduits with dried foam sealant. Front view.	
Photograph 4	
Date: 7/26/2012	
Photo Description: Plastic caps for fiber optic cable conduits with dried foam sealant. Rear view.	

Appendix B: Photographic Log
NEC – 501 Ellis Street, Mountain View, California

GEOSYNTEC CONSULTANTS Photographic Record	
Client: NEC	**Project Number:** WR0434A
Site Name: 501 Ellis Street	**Site Location:** Mountain View, CA

Photograph 5 **Date:** 7/23/2012 **Photo Description:** Fire water supply pipe before sealing.	
Photograph 6 **Date:** 7/26/2012 **Photo Description:** Fire water supply pipe after sealing with concrete grout.	

Appendix B: Photographic Log
NEC – 501 Ellis Street, Mountain View, California

GEOSYNTEC CONSULTANTS Photographic Record	
Client: NEC	**Project Number:** WR0434A
Site Name: 501 Ellis Street	**Site Location:** Mountain View, CA

Photograph 7 **Date:** 7/23/2012 **Photo Description:** Floor Cracks in SE building corner before sealing.	
Photograph 8 **Date:** 7/23/2012 **Photo Description:** Floor cuts before sealing.	

Appendix B: Photographic Log
NEC – 501 Ellis Street, Mountain View, California

GEOSYNTEC CONSULTANTS Photographic Record	
Client: NEC	**Project Number:** WR0434A
Site Name: 501 Ellis Street	**Site Location:** Mountain View, CA

Photograph 9 **Date:** 7/23/2012 **Photo Description:** Floor joint before sealing.	
Photograph 10 **Date:** 7/25/2012 **Photo Description:** Sealed floor crack.	

Appendix B: Photographic Log
NEC – 501 Ellis Street, Mountain View, California

GEOSYNTEC CONSULTANTS Photographic Record	
Client: NEC	**Project Number:** WR0434A
Site Name: 501 Ellis Street	**Site Location:** Mountain View, CA

Photograph 11 **Date:** 7/25/2012 **Photo Description:** Sealed floor crack.	
Photograph 12 **Date:** 7/25/2012 **Photo Description:** Sealed floor crack.	

Appendix B: Photographic Log
NEC – 501 Ellis Street, Mountain View, California

GEOSYNTEC CONSULTANTS Photographic Record	
Client: NEC	**Project Number:** WR0434A
Site Name: 501 Ellis Street	**Site Location:** Mountain View, CA

Photograph 13 **Date:** 7/30/2012 **Photo Description:** SSP-01/IA-01 Location	
Photograph 14 **Date:** 7/30/2012 **Photo Description:** SSP-02/IA-02 Location	

Appendix B: Photographic Log
NEC – 501 Ellis Street, Mountain View, California

GEOSYNTEC CONSULTANTS Photographic Record	
Client: NEC	**Project Number:** WR0434A
Site Name: 501 Ellis Street	**Site Location:** Mountain View, CA

Photograph 15 **Date:** 7/30/2012 **Photo Description:** SSP-03/IA-03 Location	
Photograph 16 **Date:** 7/30/2012 **Photo Description:** SSP-04/IA-04 Location	

Appendix B: Photographic Log
NEC – 501 Ellis Street, Mountain View, California

GEOSYNTEC CONSULTANTS Photographic Record	
Client: NEC	**Project Number:** WR0434A
Site Name: 501 Ellis Street	**Site Location:** Mountain View, CA

Photograph 17 **Date:** 7/30/2012 **Photo Description:** SSP-05 Location. Note that IA-05 was located in the server room, on the other side of the wall.	
Photograph 18 **Date:** 7/30/2012 **Photo Description:** SSP-06/IA-06 Location	

APPENDIX C
Titebond Self-Leveling Concrete Joint Sealer MSDS

Franklin International

Material Safety Data Sheet

Titebond Self-Leveling Concrete Joint Sealer

1. Product and company identification

CAS #	:	mixture
Address	:	Franklin International 2020 Bruck Street Columbus OH 43207
Contact person	:	Franklin Technical Services
Telephone	:	(800) 877-4583
In case of emergency	:	Franklin Security (614) 445-1300
Reference number	:	00
Product code	:	3191
Date of revision	:	3/28/2012.
Print date	:	3/29/2012.
Chemtrec (24 Hour)	:	(800) 424 - 9300
Chemtrec International	:	(703) 527 - 3887
Product use	:	self leveling concrete joint sealer sealer

2. Hazards identification

Emergency overview

Physical state	:	Liquid. [Paste.]
Color	:	Gray. [Light]
Odor	:	Slight
Hazard statements	:	MAY CAUSE EYE AND SKIN IRRITATION. This product releases methanol during cure.
Precautionary measures	:	Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.
OSHA/HCS status	:	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.
Routes of entry	:	Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Inhalation	:	No known significant effects or critical hazards.
Ingestion	:	No known significant effects or critical hazards.
Skin	:	Slightly irritating to the skin. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.
Eyes	:	Slightly irritating to the eyes. This product may irritate eyes upon contact.

Potential chronic health effects

Chronic effects	:	No known significant effects or critical hazards.
Carcinogenicity	:	No known significant effects or critical hazards.

3. Composition/information on ingredients

Canada

Name	CAS number	%
methanol	67-56-1	0.5 - 1

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

Flammability of the product : In a fire or if heated, a pressure increase will occur and the container may burst.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Small spill : Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Absorb with an inert material.

6. Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and storage

Handling : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Canada

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
methanol	US ACGIH 2/2010	200	262	-	250	328	-	-	-	-	[1]
	AB 4/2009	200	262	-	250	328	-	-	-	-	[1]
	BC 9/2010	200	-	-	250	-	-	-	-	-	[1]
	ON 7/2010	200	262	-	250	328	-	-	-	-	[1]
	QC 6/2008	200	262	-	250	328	-	-	-	-	[1]

[1]Absorbed through skin.

Mexico

Occupational exposure limits

No exposure limit value known.

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

8. Exposure controls/personal protection

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

9. Physical and chemical properties

Physical state : Liquid. [Paste.]

Flash point : Closed cup: >93.333°C (>200°F)

Color : Gray. [Light]

Odor : Slight

Relative density : 1.58

Volatility : 1% (w/w)

VOC (less water, less exempt solvents) : 10 g/l

Solubility : Insoluble in the following materials: cold water and hot water.

10. Stability and reactivity

Chemical stability : The product is stable.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Incompatibility : Slightly reactive or incompatible with the following materials: moisture.

11. Toxicological information

United States

Acute toxicity

No known significant effects or critical hazards.

Chronic toxicity

No known significant effects or critical hazards.

Irritation/Corrosion

Conclusion/Summary

Skin : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Eyes : This product may irritate eyes upon contact.

Sensitizer

11. Toxicological information

No known significant effects or critical hazards.

Carcinogenicity

No known significant effects or critical hazards.

Mutagenicity

No known significant effects or critical hazards.

Teratogenicity

No known significant effects or critical hazards.

Reproductive toxicity

No known significant effects or critical hazards.

Canada

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
methanol	LC50 Inhalation Gas. LC50 Inhalation Gas. LD50 Dermal LD50 Oral	Rat Rat Rabbit Rat	145000 ppm 64000 ppm 15800 mg/kg 5600 mg/kg	1 hours 4 hours - -

No known significant effects or critical hazards.

Chronic toxicity

No known significant effects or critical hazards.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
methanol	Eyes - Moderate irritant Eyes - Moderate irritant Skin - Moderate irritant	Rabbit Rabbit Rabbit	- - -	24 hours 100 milligrams 40 milligrams 24 hours 20 milligrams	- - -

Conclusion/Summary

Skin : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Eyes : This product may irritate eyes upon contact.

Sensitizer

No known significant effects or critical hazards.

Carcinogenicity

No known significant effects or critical hazards.

Mutagenicity

No known significant effects or critical hazards.

Teratogenicity

No known significant effects or critical hazards.

Reproductive toxicity

No known significant effects or critical hazards.

Mexico

Acute toxicity

No known significant effects or critical hazards.

Chronic toxicity

No known significant effects or critical hazards.

Irritation/Corrosion

11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
Not available.					

Conclusion/Summary

Skin : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Eyes : This product may irritate eyes upon contact.

Sensitizer

No known significant effects or critical hazards.

Carcinogenicity

No known significant effects or critical hazards.

Mutagenicity

No known significant effects or critical hazards.

Teratogenicity

No known significant effects or critical hazards.

Reproductive toxicity

No known significant effects or critical hazards.

12. Ecological information

Ecotoxicity : No known significant effects or critical hazards.

United States

Aquatic ecotoxicity

No known significant effects or critical hazards.

Persistence/degradability

No known significant effects or critical hazards.

Canada

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
methanol	Acute EC50 16.912 mg/L Marine water Acute LC50 2500000 ug/L Marine water Acute LC50 3289 to 4395 mg/L Fresh water Acute LC50 >100000 ug/L Fresh water	Algae - Ulva pertusa Crustaceans - Crangon crangon - Adult Daphnia - Daphnia magna - Neonate - <24 hours Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) - 0.2 to 0.5 g	96 hours 48 hours 48 hours 96 hours

No known significant effects or critical hazards.

Persistence/degradability

No known significant effects or critical hazards.

Mexico

Aquatic ecotoxicity

No known significant effects or critical hazards.

Persistence/degradability

No known significant effects or critical hazards.

13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-	-		-
TDG Classification	Not regulated.	-	-	-		-
Mexico Classification	Not regulated.	-	-	-		-
ADR/RID Class	Not regulated.	-	-	-		-
IMDG Class	Not regulated.	-	-	-		-
IATA-DGR Class	Not regulated.	-	-	-		-

PG* : Packing group

15. Regulatory information

United States

HCS Classification : Not regulated.

U.S. Federal regulations :

TSCA 8(a) IUR Exempt/Partial exemption: Not determined

United States inventory (TSCA 8b): All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: No products were found.
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: No products were found.

15. Regulatory information

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

Canada

WHMIS (Canada) : Class D-2A: Material causing other toxic effects (Very toxic).

Canadian lists

Canadian NPRI : None of the components are listed.

CEPA Toxic substances : None of the components are listed.

Canada inventory : Not determined.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Mexico

Classification :

International regulations

International lists : **Australia inventory (AICS)**: Not determined.
China inventory (IECSC): Not determined.
Japan inventory: Not determined.
Korea inventory: Not determined.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): Not determined.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

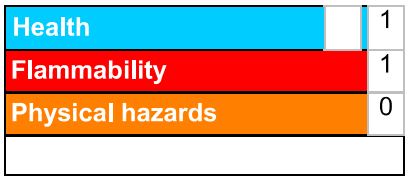
Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

16. Other information

Label requirements : MAY CAUSE EYE AND SKIN IRRITATION. This product releases methanol during cure.

Hazardous Material Information System (U.S.A.) :



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.) :

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Date of printing : **3/29/2012.**

Date of issue : 3/28/2012.

Date of previous issue : 3/2/2012.

Version : 2

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Appendix D
Soil Gas Probe Measurements

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants
1111 Broadway, 6th Floor
Oakland, California 94607
(510) 836-3034 Fax (510) 836-3036

① Project Name: NEC — Probe No.: SSP-01 — ☒ Sub-slab probe ☐ Soil gas probe
Date: 8/3/12 — Project Number: WR04348.07 — Mini Rae 2000 Serial No.: 110-012280 — Lamp: 10.6 / 11.7 eV
Site Location: Mountain View, CA — Landtech GEM 2000 Landfill Gas Meter Serial No. M: GEM07601-04
Weather: Sunny — MDG 2002 Helium detector Serial No.: MGD 2002-13
Field Personnel: TM & JL — Tracer Gas: ☒ Helium ☐ Other
Recorded By:

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other
Surface Thickness 4 inches/centimeters ☐ Unknown (i.e., asphalt or concrete)

③ 1 Casing Volume
☒ Sub-slab <0.1 L
Soil gas probe _____ (L)

⑤ Shut in test prior to pneumatic test completed, 69 in. H_2O held for 60 seconds.

⑥ Start of Pneumatic Test: 9:28

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
1	0.1	4
2	0.2	10
3	0.5	16

④ Initial Vacuum (prior to pumping) 0.0 in. H_2O

⑦ Field tubing blank reading (ppm_v) completed? ☒ Yes ☐ No PID Reading 0.0 ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v, %) (circle one)	VOCs by PID (ppm_v)
8/3	9:37	9:38	1 Min	1L	P test	1L	0.0	0.1	21.0	ONA	ONA	0.0	0.3
8/3	9:53	9:57	4	1L	.2	2L	0.0	0.1	21.7	15	22	0.5	3
8/3	10:06	10:10	4	1L	.2	3L	0.0	0.0	21.6	13	18	1.2	0.4

⑩ Helium concentration in field screened samples is less than 10% of minimum concentration in the shroud? ☒ Yes ☐ No
Note: 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☒ No ☐

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
8/3/12	10:24	SSP-01	36530	20238	1031032	29.58	2.71
	10:31						

Comments:

SGP measurements pneumatic testing.ai

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants
1111 Broadway, 6th Floor
Oakland, California 94607
(510) 836-3034 Fax (510) 836-3036

① Project Name: NEC — Probe No.: SSP-02 — ☒ Sub-slab probe ☐ Soil gas probe
Date: 5 Aug 2012 — Project Number: WR0434A-07 — Mini Rae 2000 Serial No.: 110-01280 — Lamp: 10.6 / 11.7 eV
Site Location: Mountain View — Landtech GEM 2000 Landfill Gas Meter Serial No. M: GEM07601-04
Weather: Sunny — MDG 2002 Helium detector Serial No.: MGP 2002.13
Field Personnel: TMILK & JL — Tracer Gas: ☒ Helium ☐ Other
Recorded By: TMILK

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other
Surface Thickness 4 inches/centimeters ☐ Unknown (i.e., asphalt or concrete)

③ ☒ Sub-slab <0.1 L
Soil gas probe _____ (L)

④ Initial Vacuum (prior to pumping) _____ in. H_2O

⑤ Shut in test prior to pneumatic test completed, NA in. H_2O held for ___ seconds.

⑥ Start of Pneumatic Test: NA

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
	0.1	
	0.2	
	0.5	

⑦ Field tubing blank reading (ppm_v) completed? ☒ Yes ☐ No PID Reading 0.0 ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v / %) (circle one)	VOCs by PID (ppm_v)
8/5/12	1319		4	1L	.25	1L	0	1.9	18.0	13	16	2.2	0.8
↓	1334	1334	5	1L	.2	2L	0	0.7	20.8	15	17	2.6	.2
↓	1357	1402	5	1L	.2	3L	0	1.7	18.0	17	18	2.2	.4

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☐ Yes ☒ No
Note: 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☐ No ☒

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
8/5/12	1409/1416	SSP-02	33720	00716	1031032	29.79	1.22
8/5/12	1409/1416	SSP-DUP-01	34147	00468	1031032	29.64	2.45

Comments: He test indicates leak. Adding He to shroud. Test for He. He in shroud 8-10%.
pneumatic test not performed since two tests at the site indicated typical sub-slab flow conditions

SGP measurements - pneumatic tubing.dgn

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants
1111 Broadway, 6th Floor
Oakland, California 94607
(510) 836-3034 Fax (510) 836-3036

① Project Name: NEL — Probe No.: SSP-03 — ☒ Sub-slab probe ☐ Soil gas probe
Date: 8/3/12 — Project Number: WR0434A-8.12 — Mini Rae 2000 Serial No.: 110-012280 — Lamp: (10.6) / 11.7 eV
Site Location: Mountain View, CA — Landtech GEM 2000 Landfill Gas Meter Serial No. M: GEM 07601-04
Weather: Sunny — MDG 2002 Helium detector Serial No.: MGD 2002.13
Field Personnel: JL and TMKK — Tracer Gas: ☒ Helium ☐ Other
Recorded By: TMKK

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other
Surface Thickness 4 (inches)/centimeters ☐ Unknown
(i.e., asphalt or concrete)

③ 1 Casing Volume
☒ Sub-slab <0.1 L
Soil gas probe _____ (L)

⑤ Shut in test prior to pneumatic test completed 50 in. H_2O held for 60 seconds.

⑥ Start of Pneumatic Test: 7:50

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
1	0.1	1.1
2	0.2	1
3	0.5	1.5

④ Initial Vacuum (prior to pumping) 0.0 in. H_2O

⑦ Field tubing blank reading (ppm_v) completed? ☒ Yes ☐ No PID Reading 0.0 ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v) (circle one)	VOCs by PID (ppm_v)
8/3	8:17	8:23	5	1L	.2	1L	0.1	0.2	21.5	17	20	4	0.1
8/3	8:37	8:42	5	1L	.2	2L	0.0	0.2	20.7	16	22	17	0.7
8/3	8:46	8:51	5	1L	.2	3L	0.0	0.2	20.4	15	18	1.2	.5

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☒ Yes ☐ No
Note: 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☒ No ☐

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
8/3/12		SSP-03	33403	20209	1031032	29.50	
8/3/12	8:57	SSP-03	37099	20232	1031032	29.24	4.15

Comments:
Swapped due to leak

measurements - pneumatic testing

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants
1111 Broadway, 6th Floor
Oakland, California 94607
(510) 836-3034 Fax (510) 836-3036

① Project Name: NEU
Date: 5 Aug 2012 Project Number: WN[illegible]A-072
Site Location: Mountain View
Weather: Sunny, clear
Field Personnel: TMK & JL
Recorded By: TMK

Probe No.: SSP-04 ☒ Sub-slab probe ☐ Soil gas probe
Mini Rae 2000 Serial No.: 110-01280 Lamp (10.6) / 11.7 eV
Landtech GEM 2000 Landfill Gas Meter Serial No. M: GEM07661-04
MDG 2002 Helium detector Serial No.: MGD 2002.13
Tracer Gas: ☒ Helium ☐ Other

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other
Surface Thickness 4 inches/centimeters ☐ Unknown
(i.e., asphalt or concrete)

③ 1 Casing Volume
☒ Sub-slab <0.1 L
Soil gas probe ____ (L)

④ Initial Vacuum (prior to pumping) ____ in. H_2O

⑤ Shut in test prior to pneumatic test completed, NA in. H_2O held for ___ seconds.

⑥ Start of Pneumatic Test: NA

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
	0.1	
	0.2	
	0.5	

⑦ Field tubing blank reading (ppm_v) completed? ☒ Yes ☐ No PID Reading 0.0 ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v / (%)) (circle one)	VOCs by PID (ppm_v)
8/5/12	1529												
↓	1600	1603	3	1L	.33	1L	* ~~0.0~~	~~0.1~~	~~21.5~~	14	16	0	1.9
↓	1607	1610	3	1L	.33	2L	* ~~0.0~~	~~0.1~~	~~21.6~~	14	16	200 ppm	1.7
↓	1612			1L		3	0.0	2.9	18.1	14	16	225 ppm	1.2

⑩ Helium concentration in field screened samples is less than ~~5%~~ 10% of minimum concentration in the shroud? ☒ Yes ☐ No
Note: 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☒ No ☐

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
8/5/12	1624-1628	SSP-04	31432	00219	1031032	29.61	2.93

Comments: * meter tubing was disconnected
pneumatic test not performed since two tests at the site indicated typical sub-slab flow conditions

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants
1111 Broadway, 6th Floor
Oakland, California 94607
(510) 836-3034 Fax (510) 836-3036

① Project Name: NEC
Date: 3 Aug 12 Project Number: WR04434A-8.12
Site Location: Mountain View
Weather: Sunny
Field Personnel: JL & TMKK
Recorded By: TMKK

Probe No.: SSP-05 ☒ Sub-slab probe ☐ Soil gas probe
Mini Rae 2000 Serial No.: 110-012200 Lamp: 10.6 / 11.7 eV
Landtech GEM 2000 Landfill Gas Meter Serial No. M: GEM 07601-04
MDG 2002 Helium detector Serial No.: MGD 2002. 13
Tracer Gas: ☒ Helium ☐ Other

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other
Surface Thickness 4 inches/centimeters ☐ Unknown (i.e., asphalt or concrete)

③ 1 Casing Volume
☒ Sub-slab <0.1 L
Soil gas probe ____ (L)

④ Initial Vacuum (prior to pumping) ____ in. H_2O

⑤ Shut in test prior to pneumatic test completed. NA in. H_2O held for ___ seconds.

⑥ Start of Pneumatic Test: NA

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
	0.1	
	0.2	
	0.5	

⑦ Field tubing blank reading (ppm_v) completed? ☒ Yes ☐ No PID Reading 0.0 ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas: Shroud (%) Min	Tracer Gas: Shroud (%) Max	Tracer Gas: Sample (ppm_v / %) (circle one)	VOCs by PID (ppm_v)
8/3/12	1229	1233	3:30	1L		1L	0.0	0.0	20.2	18	24	4.5	.8
↓	1242	1246	4:00	1L		2L	0	0	21.4	0	0	3150 ppm	.2
↓	1248	1252	4:00			3L	.1	0	20.8	12	17	4.4	.5

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☐ Yes ☒ No **Note:** 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☒ No ☐

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
~~8/3/12~~		~~SSP-05~~	~~31777~~	~~20193~~	1031032	29.20	
8/3/12	1319/1323	SSP-05	33403	20209	1031032	29.5	2.20

Comments: Conc of He in shroud during sample was 10-14. test for He in sample. pneumatic test not performed since two tests at the site indicated typical sub-slab flow conditions

SGP measurements

SOIL GAS PROBE MEASUREMENTS

Geosyntec consultants
1111 Broadway, 6th Floor
Oakland, California 94607
(510) 836-3034 Fax (510) 836-3036

① Project Name: NEC — Probe No.: SSP-06 — ☒ Sub-slab probe ☐ Soil gas probe
Date: 3 Aug 12 — Project Number: WR04394-85 — Mini Rae 2000 Serial No.: 110-012280 — Lamp (10.6) / 11.7 eV
Site Location: Mountain View — Landtech GEM 2000 Landfill Gas Meter Serial No. M: GEM07600I-04
Weather: Sunny — MDG 2002 Helium detector Serial No.: MGD 2002.13
Field Personnel: JL & TMFK — Tracer Gas: ☒ Helium ☐ Other
Recorded By: TMFK

② Surface Type: ☐ Asphalt ☒ Concrete ☐ Grass ☐ Other
Surface Thickness _____ inches/centimeters ☐ Unknown (i.e., asphalt or concrete)

③ 1 Casing Volume
☐ Sub-slab <0.1 L
Soil gas probe _____ (L)

⑤ Shut in test prior to pneumatic test completed NA in. H_2O held for ___ seconds.

⑥ Start of Pneumatic Test: NA

Elapsed Time (min.)	Pump Flow Rate (LPM)	Well Head Vacuum in. H_2O
	0.1	
	0.2	
	0.5	

④ Initial Vacuum (prior to pumping) _____ in. H_2O

⑦ Field tubing blank reading (ppm_v) completed? ☒ Yes ☐ No PID Reading 0.0 ppm_v

⑧ Shut in test prior to purging completed? Yes ☒ No ☐

⑨ Purging

Date	Start Time	End Time	Elapsed Time (min.)	Bag Volume (L)	Purge Rate (LPM)	Cumulative Volume (L)	CH_4 (%)	CO_2 (%)	O_2 (%)	Tracer Gas Shroud (%) Min	Tracer Gas Shroud (%) Max	Tracer Gas Sample (ppm_v, %) (circle one)	VOCs by PID (ppm_v)
8/3/12	13:52	13:57	5	1		1	0.0	3.5	17.7	12	16	3300	1.0
	14:01	14:06	5	1		2	0.0	3.5	17.6	13	15	6475	1.0
	14:10	14:15	5	1		3	0.0	3.6	17.5	13	16	6500	0.9

⑩ Helium concentration in field screened samples is less than 5% of minimum concentration in the shroud? ☒ Yes ☐ No
Note: 1% helium = 10,000 ppm_v

⑪ Shut in test prior to sample collection completed? Yes ☒ No ☐

⑫ Sample Collection

Date	Time	Sample ID	Summa Canister ID	Flow Controller #	Vacuum Gauge #	Initial Vacuum (in. Hg)	Final Vacuum (in. Hg)
8/3/12	1422/1430	SSP-06	23834	20284	~~29.54~~ 30 32	29.51	2.69

Comments: pneumatic test not performed since two tests at the site indicated typical sub-slab flow conditions.

Appendix E
Air Toxics Laboratory Report

8/24/2012
Ms. Jackie Lanzon
GeoSyntec Consultants
1111 Broadway
6th Floor
Oakland CA 94607

Project Name: NEC
Project #: WR0434A-8*12
Workorder #: 1208156AR1

Dear Ms. Jackie Lanzon

The following report includes the data for the above referenced project for sample(s) received on 8/7/2012 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 SIM are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1208156AR1

Work Order Summary

CLIENT:	Ms. Jackie Lanzon GeoSyntec Consultants 1111 Broadway 6th Floor Oakland, CA 94607	**BILL TO:**	Ms. Jackie Lanzon GeoSyntec Consultants 1111 Broadway 6th Floor Oakland, CA 94607
PHONE:	510-836-3034	**P.O. #**	
FAX:	510-836-3036	**PROJECT #**	WR0434A-8*12 NEC
DATE RECEIVED:	08/07/2012	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	08/23/2012		
DATE REISSUED:	08/24/2012		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	OA-01	Modified TO-15 SIM	1.6 "Hg	5 psi
02A	IA-01	Modified TO-15 SIM	5.8 "Hg	5 psi
03A	IA-02	Modified TO-15 SIM	5.6 "Hg	5 psi
04A	IA-03	Modified TO-15 SIM	4.6 "Hg	5 psi
05A	IA-04	Modified TO-15 SIM	6.2 "Hg	5 psi
06A	IA-05	Modified TO-15 SIM	5.4 "Hg	5 psi
07A	IA-06	Modified TO-15 SIM	6.0 "Hg	5 psi
08A	1A-DUP-01	Modified TO-15 SIM	6.0 "Hg	5 psi
09A	Lab Blank	Modified TO-15 SIM	NA	NA
10A	CCV	Modified TO-15 SIM	NA	NA
11A	LCS	Modified TO-15 SIM	NA	NA
11AA	LCSD	Modified TO-15 SIM	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 08/24/12

Technical Director

Certfication numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291,
TX NELAP - T104704434-12-5, UT NELAP CA009332012-3, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2011, Expiration date: 10/17/2012.
Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
GeoSyntec Consultants
Workorder# 1208156AR1

Eight 6 Liter Summa Canister (SIM Certified) samples were received on August 07, 2012. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	For Full Scan: 30% RSD with 4 compounds allowed out to < 40% RSD For SIM: Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four allowed out up to </=40%.; flag and narrate outliers For SIM: Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=40%.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. All The canisters used for this project have been certified to the Reporting Limit for the target analytes included in this workorder. Concentrations that are below the level at which the canister was certified may be false positives.

THE WORKORDER WAS REISSUED ON 8/24/12 TO REPORT RESULTS IN ug/m3 PER CLIENT REQUEST.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV and/or LCS.

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

eurofins | Air Toxics

MODIFIED EPA METHOD TO-15 GC/MS SIM
NEC

Client ID:	OA-01		
Lab ID:	1208156AR1-01A	**Date/Time Analyzed:**	8/22/12 07:04 PM
Date/Time Collecte	8/2/12 08:29 PM	**Dilution Factor:**	1.90
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e082212sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	0.0089	0.023	0.15	Not Detected
1,1-Dichloroethene	75-35-4	0.014	0.023	0.075	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.010	0.023	0.15	0.028 J
Tetrachloroethene	127-18-4	0.016	0.038	0.26	0.11 J
trans-1,2-Dichloroethene	156-60-5	0.012	0.023	0.75	0.019 J
Trichloroethene	79-01-6	0.0055	0.030	0.20	1.1
Vinyl Chloride	75-01-4	0.0094	0.015	0.048	Not Detected

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	106
4-Bromofluorobenzene	460-00-4	70-130	93
Toluene-d8	2037-26-5	70-130	96

eurofins | Air Toxics

MODIFIED EPA METHOD TO-15 GC/MS SIM
NEC

Client ID:	IA-01		
Lab ID:	1208156AR1-02A	**Date/Time Analyzed:**	8/22/12 08:00 PM
Date/Time Collecte	8/2/12 08:36 PM	**Dilution Factor:**	1.66
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e082213sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	0.0078	0.020	0.13	Not Detected
1,1-Dichloroethene	75-35-4	0.012	0.020	0.066	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.0089	0.020	0.13	0.026 J
Tetrachloroethene	127-18-4	0.014	0.034	0.22	0.074 J
trans-1,2-Dichloroethene	156-60-5	0.010	0.020	0.66	0.022 J
Trichloroethene	79-01-6	0.0048	0.027	0.18	1.9
Vinyl Chloride	75-01-4	0.0082	0.013	0.042	Not Detected

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	109
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	94

eurofins | Air Toxics

MODIFIED EPA METHOD TO-15 GC/MS SIM
NEC

Client ID:	IA-02		
Lab ID:	1208156AR1-03A	**Date/Time Analyzed:**	8/22/12 08:41 PM
Date/Time Collecte	8/2/12 08:33 PM	**Dilution Factor:**	1.65
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e082214sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	0.0077	0.020	0.13	Not Detected
1,1-Dichloroethene	75-35-4	0.012	0.020	0.065	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.0088	0.020	0.13	0.012 J
Tetrachloroethene	127-18-4	0.014	0.033	0.22	0.15 J
trans-1,2-Dichloroethene	156-60-5	0.010	0.020	0.65	0.030 J
Trichloroethene	79-01-6	0.0048	0.026	0.18	4.1
Vinyl Chloride	75-01-4	0.0081	0.013	0.042	Not Detected

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	110
4-Bromofluorobenzene	460-00-4	70-130	98
Toluene-d8	2037-26-5	70-130	94

eurofins | Air Toxics

MODIFIED EPA METHOD TO-15 GC/MS SIM
NEC

Client ID:	IA-03		
Lab ID:	1208156AR1-04A	**Date/Time Analyzed:**	8/22/12 09:26 PM
Date/Time Collecte	8/2/12 08:34 PM	**Dilution Factor:**	1.58
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e082215sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	0.0074	0.019	0.13	Not Detected
1,1-Dichloroethene	75-35-4	0.012	0.019	0.063	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.0084	0.019	0.12	Not Detected
Tetrachloroethene	127-18-4	0.013	0.032	0.21	0.17 J
trans-1,2-Dichloroethene	156-60-5	0.0097	0.019	0.63	0.021 J
Trichloroethene	79-01-6	0.0046	0.025	0.17	3.9
Vinyl Chloride	75-01-4	0.0078	0.012	0.040	Not Detected

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	95

eurofins | Air Toxics

MODIFIED EPA METHOD TO-15 GC/MS SIM
NEC

Client ID:	IA-04		
Lab ID:	1208156AR1-05A	**Date/Time Analyzed:**	8/23/12 08:37 AM
Date/Time Collecte	8/2/12 08:35 PM	**Dilution Factor:**	1.69
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e082221sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	0.0079	0.020	0.14	Not Detected
1,1-Dichloroethene	75-35-4	0.012	0.020	0.067	0.050 J
cis-1,2-Dichloroethene	156-59-2	0.0090	0.020	0.13	0.020 J
Tetrachloroethene	127-18-4	0.014	0.034	0.23	0.14 J
trans-1,2-Dichloroethene	156-60-5	0.010	0.020	0.67	0.011 J
Trichloroethene	79-01-6	0.0049	0.027	0.18	3.7
Vinyl Chloride	75-01-4	0.0083	0.013	0.043	Not Detected

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	114
4-Bromofluorobenzene	460-00-4	70-130	98
Toluene-d8	2037-26-5	70-130	96

eurofins | Air Toxics

MODIFIED EPA METHOD TO-15 GC/MS SIM
NEC

Client ID:	IA-05		
Lab ID:	1208156AR1-06A	**Date/Time Analyzed:**	8/23/12 06:33 AM
Date/Time Collecte	8/2/12 08:34 PM	**Dilution Factor:**	1.63
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e082218sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	0.0076	0.020	0.13	Not Detected
1,1-Dichloroethene	75-35-4	0.012	0.019	0.065	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.0087	0.019	0.13	0.020 J
Tetrachloroethene	127-18-4	0.014	0.033	0.22	0.17 J
trans-1,2-Dichloroethene	156-60-5	0.010	0.019	0.65	0.028 J
Trichloroethene	79-01-6	0.0047	0.026	0.18	3.1
Vinyl Chloride	75-01-4	0.0080	0.012	0.042	Not Detected

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	113
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	95

eurofins | Air Toxics

MODIFIED EPA METHOD TO-15 GC/MS SIM
NEC

Client ID:	IA-06		
Lab ID:	1208156AR1-07A	**Date/Time Analyzed:**	8/23/12 07:14 AM
Date/Time Collecte	8/2/12 07:45 PM	**Dilution Factor:**	1.68
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e082219sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	0.0079	0.020	0.14	Not Detected
1,1-Dichloroethene	75-35-4	0.012	0.020	0.067	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.0090	0.020	0.13	Not Detected
Tetrachloroethene	127-18-4	0.014	0.034	0.23	0.26
trans-1,2-Dichloroethene	156-60-5	0.010	0.020	0.67	0.030 J
Trichloroethene	79-01-6	0.0049	0.027	0.18	3.6
Vinyl Chloride	75-01-4	0.0083	0.013	0.043	Not Detected

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	113
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	95

eurofins | Air Toxics

MODIFIED EPA METHOD TO-15 GC/MS SIM
NEC

Client ID:	1A-DUP-01		
Lab ID:	1208156AR1-08A	**Date/Time Analyzed:**	8/23/12 07:56 AM
Date/Time Collecte	8/2/12 08:34 PM	**Dilution Factor:**	1.68
Media:	6 Liter Summa Canister (SIM Certified)	**Instrument/Filename:**	msde.i / e082220sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	0.0079	0.020	0.14	Not Detected
1,1-Dichloroethene	75-35-4	0.012	0.020	0.067	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.0090	0.020	0.13	0.011 J
Tetrachloroethene	127-18-4	0.014	0.034	0.23	0.24
trans-1,2-Dichloroethene	156-60-5	0.010	0.020	0.67	0.013 J
Trichloroethene	79-01-6	0.0049	0.027	0.18	4.1
Vinyl Chloride	75-01-4	0.0083	0.013	0.043	Not Detected

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	94

eurofins | Air Toxics

MODIFIED EPA METHOD TO-15 GC/MS SIM
NEC

Client ID:	Lab Blank		
Lab ID:	1208156AR1-09A	**Date/Time Analyzed:**	8/22/12 01:36 PM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msde.i / e082206sima

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	0.0047	0.012	0.081	Not Detected
1,1-Dichloroethene	75-35-4	0.0073	0.012	0.040	0.011 J
cis-1,2-Dichloroethene	156-59-2	0.0054	0.012	0.079	0.026 J
Tetrachloroethene	127-18-4	0.0084	0.020	0.14	0.012 J
trans-1,2-Dichloroethene	156-60-5	0.0061	0.012	0.40	0.037 J
Trichloroethene	79-01-6	0.0029	0.016	0.11	0.043 J
Vinyl Chloride	75-01-4	0.0049	0.0077	0.026	Not Detected

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	108
4-Bromofluorobenzene	460-00-4	70-130	97
Toluene-d8	2037-26-5	70-130	98

eurofins | Air Toxics

MODIFIED EPA METHOD TO-15 GC/MS SIM
NEC

Client ID:	CCV		
Lab ID:	1208156AR1-10A	**Date/Time Analyzed:**	8/22/12 10:13 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msde.i / e082202sim

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	99
1,1-Dichloroethene	75-35-4	93
cis-1,2-Dichloroethene	156-59-2	99
Tetrachloroethene	127-18-4	85
trans-1,2-Dichloroethene	156-60-5	99
Trichloroethene	79-01-6	95
Vinyl Chloride	75-01-4	99

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	107
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	104

eurofins | Air Toxics

MODIFIED EPA METHOD TO-15 GC/MS SIM
NEC

Client ID:	LCS		
Lab ID:	1208156AR1-11A	**Date/Time Analyzed:**	8/22/12 10:57 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msde.i / e082203sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	
1,1-Dichloroethane	75-34-3			101
1,1-Dichloroethene	75-35-4			102
cis-1,2-Dichloroethene	156-59-2			102
Tetrachloroethene	127-18-4			85
trans-1,2-Dichloroethene	156-60-5			115
Trichloroethene	79-01-6			98
Vinyl Chloride	75-01-4			101

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	106
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	105

* % Recovery is calculated using unrounded analytical results.

eurofins | Air Toxics

MODIFIED EPA METHOD TO-15 GC/MS SIM
NEC

Client ID:	LCSD		
Lab ID:	1208156AR1-11AA	**Date/Time Analyzed:**	8/22/12 11:41 AM
Date/Time Collecte	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msde.i / e082204sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	
1,1-Dichloroethane	75-34-3			100
1,1-Dichloroethene	75-35-4			102
cis-1,2-Dichloroethene	156-59-2			103
Tetrachloroethene	127-18-4			84
trans-1,2-Dichloroethene	156-60-5			114
Trichloroethene	79-01-6			98
Vinyl Chloride	75-01-4			100

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	105
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	104

* % Recovery is calculated using unrounded analytical results.

eurofins | Air Toxics

8/18/2012
Ms. Jackie Lanzon
GeoSyntec Consultants
1111 Broadway
6th Floor
Oakland CA 94607

Project Name: NEC
Project #: WR0434A-8*12
Workorder #: 1208156B

Dear Ms. Jackie Lanzon

The following report includes the data for the above referenced project for sample(s) received on 8/7/2012 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1208156B

Work Order Summary

CLIENT:	Ms. Jackie Lanzon GeoSyntec Consultants 1111 Broadway 6th Floor Oakland, CA 94607	**BILL TO:**	Ms. Jackie Lanzon GeoSyntec Consultants 1111 Broadway 6th Floor Oakland, CA 94607
PHONE:	510-836-3034	**P.O. #**	
FAX:	510-836-3036	**PROJECT #**	WR0434A-8*12 NEC
DATE RECEIVED:	08/07/2012	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	08/18/2012		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
09A	SSP-01	Modified TO-15	2.2 "Hg	5 psi
10A	SSP-02	Modified TO-15	0.0 "Hg	5 psi
11A	SSP-03	Modified TO-15	3.6 "Hg	5 psi
12A	SSP-04	Modified TO-15	1.2 "Hg	5 psi
13A	SSP-05	Modified TO-15	1.8 "Hg	5 psi
14A	SSP-06	Modified TO-15	2.2 "Hg	5 psi
15A	SSP-DUP-01	Modified TO-15	2.0 "Hg	5 psi
16A	Lab Blank	Modified TO-15	NA	NA
17A	CCV	Modified TO-15	NA	NA
18A	LCS	Modified TO-15	NA	NA
18AA	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 08/18/12

Technical Director

Certfication numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291,
TX NELAP - T104704434-12-5, UT NELAP CA009332012-3, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2011, Expiration date: 10/17/2012.
Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

eurofins | Air Toxics

LABORATORY NARRATIVE
EPA Method TO-15
GeoSyntec Consultants
Workorder# 1208156B

Seven 1 Liter Summa Canister samples were received on August 07, 2012. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

Despite the use of flow controllers for sample collection, the final canister vacuums for sample SSP-02 were measured at ambient pressure in the field. These ambient pressure readings were confirmed by the laboratory upon sample receipt.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV and/or LCS.
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

eurofins | Air Toxics

Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SSP-01

Lab ID#: 1208156B-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.72	0.94	3.9	5.1

Client Sample ID: SSP-02

Lab ID#: 1208156B-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.67	9.0	3.6	48
Tetrachloroethene	0.67	1.2	4.5	8.0

Client Sample ID: SSP-03

Lab ID#: 1208156B-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.76	7.0	4.1	38
Tetrachloroethene	0.76	1.1	5.2	7.4

Client Sample ID: SSP-04

Lab ID#: 1208156B-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.70	1.7	3.8	9.3

Client Sample ID: SSP-05

Lab ID#: 1208156B-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.71	1.5	3.8	7.8

Client Sample ID: SSP-06

Lab ID#: 1208156B-14A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)

eurofins | Air Toxics

Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SSP-06

Lab ID#: 1208156B-14A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.97	360	5.2	1900
Tetrachloroethene	0.97	40	6.6	270

Client Sample ID: SSP-DUP-01

Lab ID#: 1208156B-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.72	10	3.9	55
Tetrachloroethene	0.72	1.5	4.9	10

eurofins | Air Toxics

Client Sample ID: SSP-01

Lab ID#: 1208156B-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080929**	**Date of Collection: 8/3/12 10:31:00 AM**	
Dil. Factor:	**1.45**	**Date of Analysis: 8/10/12 09:45 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.72	Not Detected	1.8	Not Detected
1,1-Dichloroethene	0.72	Not Detected	2.9	Not Detected
trans-1,2-Dichloroethene	0.72	Not Detected	2.9	Not Detected
1,1-Dichloroethane	0.72	Not Detected	2.9	Not Detected
cis-1,2-Dichloroethene	0.72	Not Detected	2.9	Not Detected
Trichloroethene	0.72	0.94	3.9	5.1
Tetrachloroethene	0.72	Not Detected	4.9	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	114	70-130

eurofins | Air Toxics

Client Sample ID: SSP-02

Lab ID#: 1208156B-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080930**	**Date of Collection: 8/5/12 2:16:00 PM**	
Dil. Factor:	**1.34**	**Date of Analysis: 8/10/12 10:23 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.67	Not Detected	1.7	Not Detected
1,1-Dichloroethene	0.67	Not Detected	2.6	Not Detected
trans-1,2-Dichloroethene	0.67	Not Detected	2.6	Not Detected
1,1-Dichloroethane	0.67	Not Detected	2.7	Not Detected
cis-1,2-Dichloroethene	0.67	Not Detected	2.6	Not Detected
Trichloroethene	0.67	9.0	3.6	48
Tetrachloroethene	0.67	1.2	4.5	8.0

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	92	70-130
4-Bromofluorobenzene	106	70-130

eurofins | Air Toxics

Client Sample ID: SSP-03

Lab ID#: 1208156B-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080931**	**Date of Collection: 8/3/12 9:02:00 AM**	
Dil. Factor:	**1.52**	**Date of Analysis: 8/10/12 11:00 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.76	Not Detected	1.9	Not Detected
1,1-Dichloroethene	0.76	Not Detected	3.0	Not Detected
trans-1,2-Dichloroethene	0.76	Not Detected	3.0	Not Detected
1,1-Dichloroethane	0.76	Not Detected	3.1	Not Detected
cis-1,2-Dichloroethene	0.76	Not Detected	3.0	Not Detected
Trichloroethene	0.76	7.0	4.1	38
Tetrachloroethene	0.76	1.1	5.2	7.4

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	114	70-130

eurofins | Air Toxics

Client Sample ID: SSP-04

Lab ID#: 1208156B-12A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080934**	**Date of Collection: 8/5/12 4:28:00 PM**	
Dil. Factor:	**1.40**	**Date of Analysis: 8/10/12 12:53 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.70	Not Detected	1.8	Not Detected
1,1-Dichloroethene	0.70	Not Detected	2.8	Not Detected
trans-1,2-Dichloroethene	0.70	Not Detected	2.8	Not Detected
1,1-Dichloroethane	0.70	Not Detected	2.8	Not Detected
cis-1,2-Dichloroethene	0.70	Not Detected	2.8	Not Detected
Trichloroethene	0.70	1.7	3.8	9.3
Tetrachloroethene	0.70	Not Detected	4.7	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	110	70-130

eurofins | Air Toxics

Client Sample ID: SSP-05

Lab ID#: 1208156B-13A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080932**	**Date of Collection:**	**8/3/12 1:23:00 PM**
Dil. Factor:	**1.42**	**Date of Analysis:**	**8/10/12 11:50 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.71	Not Detected	1.8	Not Detected
1,1-Dichloroethene	0.71	Not Detected	2.8	Not Detected
trans-1,2-Dichloroethene	0.71	Not Detected	2.8	Not Detected
1,1-Dichloroethane	0.71	Not Detected	2.9	Not Detected
cis-1,2-Dichloroethene	0.71	Not Detected	2.8	Not Detected
Trichloroethene	0.71	1.5	3.8	7.8
Tetrachloroethene	0.71	Not Detected	4.8	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	117	70-130

eurofins | Air Toxics

Client Sample ID: SSP-06

Lab ID#: 1208156B-14A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080936**	**Date of Collection: 8/3/12 2:30:00 PM**	
Dil. Factor:	**1.94**	**Date of Analysis: 8/10/12 02:39 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.97	Not Detected	2.5	Not Detected
1,1-Dichloroethene	0.97	Not Detected	3.8	Not Detected
trans-1,2-Dichloroethene	0.97	Not Detected	3.8	Not Detected
1,1-Dichloroethane	0.97	Not Detected	3.9	Not Detected
cis-1,2-Dichloroethene	0.97	Not Detected	3.8	Not Detected
Trichloroethene	0.97	360	5.2	1900
Tetrachloroethene	0.97	40	6.6	270

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	111	70-130

eurofins | Air Toxics

Client Sample ID: SSP-DUP-01

Lab ID#: 1208156B-15A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080933**	**Date of Collection: NA**	
Dil. Factor:	**1.44**	**Date of Analysis: 8/10/12 12:16 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.72	Not Detected	1.8	Not Detected
1,1-Dichloroethene	0.72	Not Detected	2.8	Not Detected
trans-1,2-Dichloroethene	0.72	Not Detected	2.8	Not Detected
1,1-Dichloroethane	0.72	Not Detected	2.9	Not Detected
cis-1,2-Dichloroethene	0.72	Not Detected	2.8	Not Detected
Trichloroethene	0.72	10	3.9	55
Tetrachloroethene	0.72	1.5	4.9	10

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	108	70-130

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1208156B-16A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080922**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/9/12 08:51 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	90	70-130
4-Bromofluorobenzene	105	70-130

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 1208156B-17A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080917**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/9/12 05:48 PM**	

Compound	**%Recovery**
Vinyl Chloride	78
1,1-Dichloroethene	84
trans-1,2-Dichloroethene	93
1,1-Dichloroethane	83
cis-1,2-Dichloroethene	86
Trichloroethene	89
Tetrachloroethene	100

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	114	70-130

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 1208156B-18A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080918**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/9/12 06:24 PM**	

Compound	**%Recovery**
Vinyl Chloride	83
1,1-Dichloroethene	94
trans-1,2-Dichloroethene	105
1,1-Dichloroethane	86
cis-1,2-Dichloroethene	87
Trichloroethene	93
Tetrachloroethene	101

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	114	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1208156B-18AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p080919**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/9/12 06:51 PM**	

Compound	**%Recovery**
Vinyl Chloride	84
1,1-Dichloroethene	91
trans-1,2-Dichloroethene	107
1,1-Dichloroethane	84
cis-1,2-Dichloroethene	89
Trichloroethene	90
Tetrachloroethene	103

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	116	70-130

8/15/2012
Ms. Jackie Lanzon
GeoSyntec Consultants
1111 Broadway
6th Floor
Oakland CA 94607

Project Name: NEC
Project #: WR0434A-8*12
Workorder #: 1208156C

Dear Ms. Jackie Lanzon

The following report includes the data for the above referenced project for sample(s) received on 8/7/2012 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1208156C

Work Order Summary

CLIENT:	Ms. Jackie Lanzon GeoSyntec Consultants 1111 Broadway 6th Floor Oakland, CA 94607	**BILL TO:**	Ms. Jackie Lanzon GeoSyntec Consultants 1111 Broadway 6th Floor Oakland, CA 94607
PHONE:	510-836-3034	**P.O. #**	
FAX:	510-836-3036	**PROJECT #**	WR0434A-8*12 NEC
DATE RECEIVED:	08/07/2012	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	08/15/2012		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
10A	SSP-02	Modified ASTM D-1946	0.0 "Hg	5 psi
13A	SSP-05	Modified ASTM D-1946	1.8 "Hg	5 psi
15A	SSP-DUP-01	Modified ASTM D-1946	2.0 "Hg	5 psi
16A	Lab Blank	Modified ASTM D-1946	NA	NA
17A	LCS	Modified ASTM D-1946	NA	NA
17AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 08/15/12

Technical Director

Certfication numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291,
TX NELAP - T104704434-12-5, UT NELAP CA009332012-3, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2011, Expiration date: 10/17/2012.
Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified ASTM D-1946
GeoSyntec Consultants
Workorder# 1208156C

Three 1 Liter Summa Canister samples were received on August 07, 2012. The laboratory performed analysis via Modified ASTM Method D-1946 for Helium gas in air using GC/TCD. The method involves direct injection of 1.0 mL of sample.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	*ASTM D-1946*	*ATL Modifications*
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections > 5 X's the RL.

Receiving Notes

Despite the use of flow controllers for sample collection, the final canister vacuums for sample SSP-02 were measured at ambient pressure in the field. These ambient pressure readings were confirmed by the laboratory upon sample receipt.

OR Per client instructions, the analysis was cancelled.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

eurofins | Air Toxics

Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: SSP-02

Lab ID#: 1208156C-10A

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.067	0.097

Client Sample ID: SSP-05

Lab ID#: 1208156C-13A

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.071	3.0

Client Sample ID: SSP-DUP-01

Lab ID#: 1208156C-15A

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.072	0.22

eurofins | Air Toxics

Client Sample ID: SSP-02

Lab ID#: 1208156C-10A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9080913b**	**Date of Collection: 8/5/12 2:16:00 PM**	
Dil. Factor:	**1.34**	**Date of Analysis: 8/9/12 02:16 PM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.067	0.097

Container Type: 1 Liter Summa Canister

eurofins | Air Toxics

Client Sample ID: SSP-05

Lab ID#: 1208156C-13A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9080914b**	**Date of Collection: 8/3/12 1:23:00 PM**	
Dil. Factor:	**1.42**	**Date of Analysis: 8/9/12 02:50 PM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.071	3.0

Container Type: 1 Liter Summa Canister

eurofins | Air Toxics

Client Sample ID: SSP-DUP-01

Lab ID#: 1208156C-15A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9080915b**	**Date of Collection: NA**	
Dil. Factor:	**1.44**	**Date of Analysis: 8/9/12 03:22 PM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.072	0.22

Container Type: 1 Liter Summa Canister

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1208156C-16A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9080903b**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/9/12 08:13 AM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.050	Not Detected

Container Type: NA - Not Applicable

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 1208156C-17A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9080902b**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/9/12 07:46 AM**	

Compound	%Recovery
Helium	99

Container Type: NA - Not Applicable

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1208156C-17AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**9080925b**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/9/12 08:59 PM**	

Compound	%Recovery
Helium	100

Container Type: NA - Not Applicable

Appendix F

Soil Vapor Extraction System Construction Drawings

SOIL VAPOR EXTRACTION SYSTEM CONSTRUCTION DRAWINGS

501 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

DECEMBER 2012

LIST OF DRAWINGS

SHEET NO.	DRAWING TITLE
G-1	TITLE SHEET
C-1	SITE PLAN LAYOUT
C-2	EXTRACTION AND OBSERVATION WELL DETAILS
P-1	PROCESS FLOW DIAGRAM

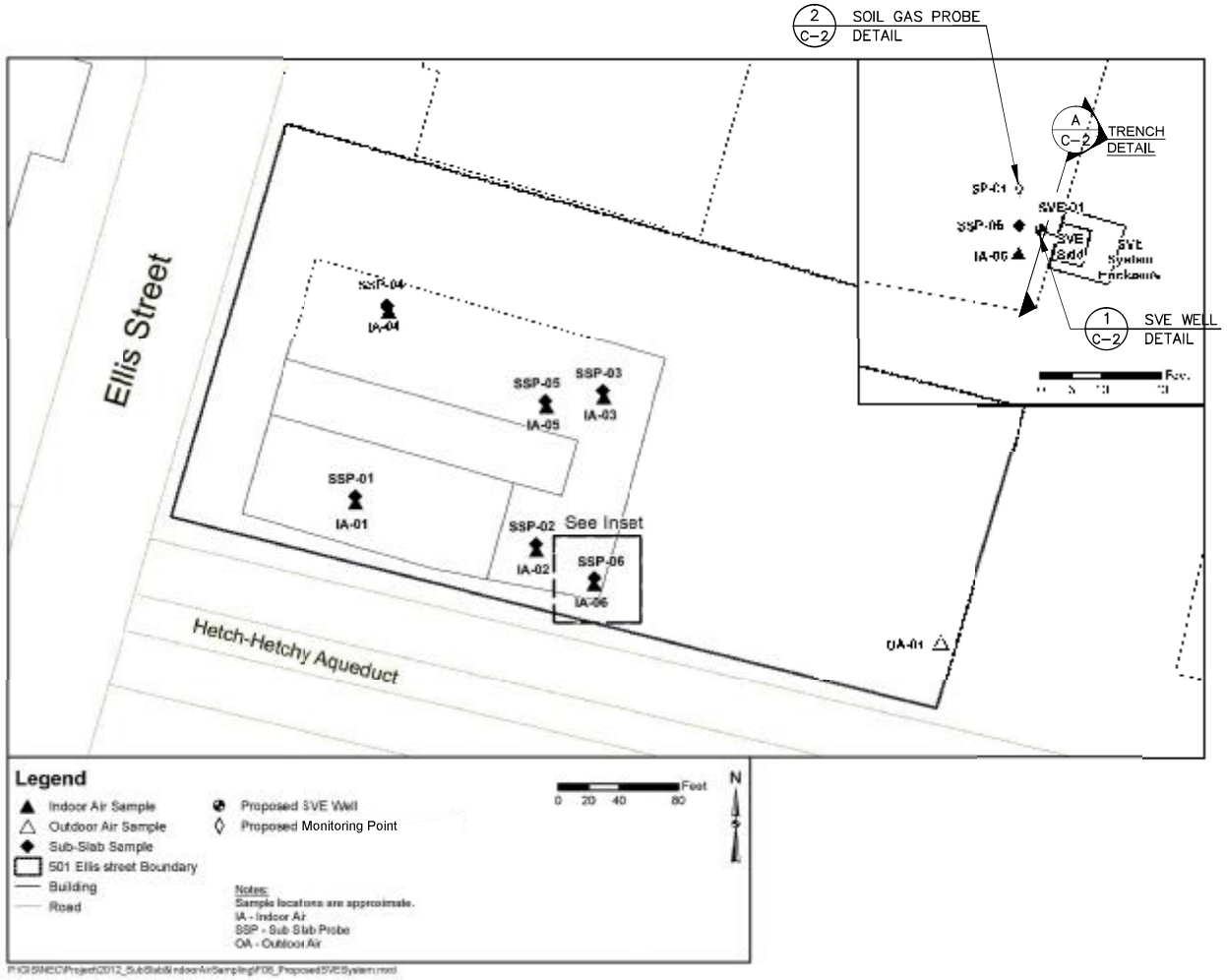
PREPARED FOR:

RENESAS ELECTRONICS AMERICA, INC.
2880 SCOTT BLVD, M/S SC3300
SANTA CLARA, CA 95050

PREPARED BY:

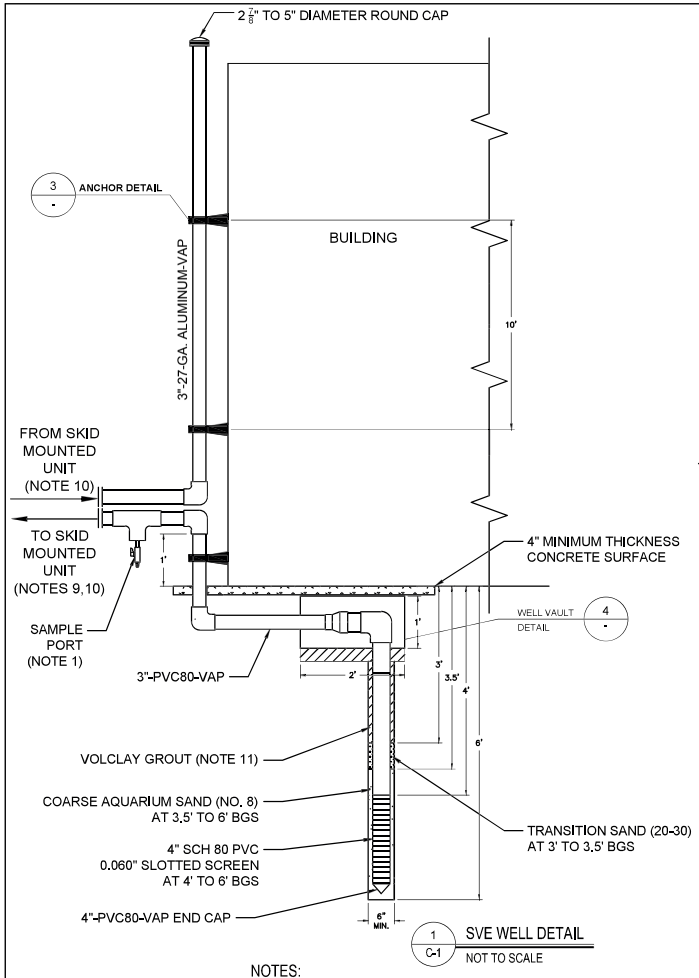
Geosyntec consultants
1111 BROADWAY STREET, SUITE 600
OAKLAND, CALIFORNIA 94607, USA
PHONE: 510.836.3034

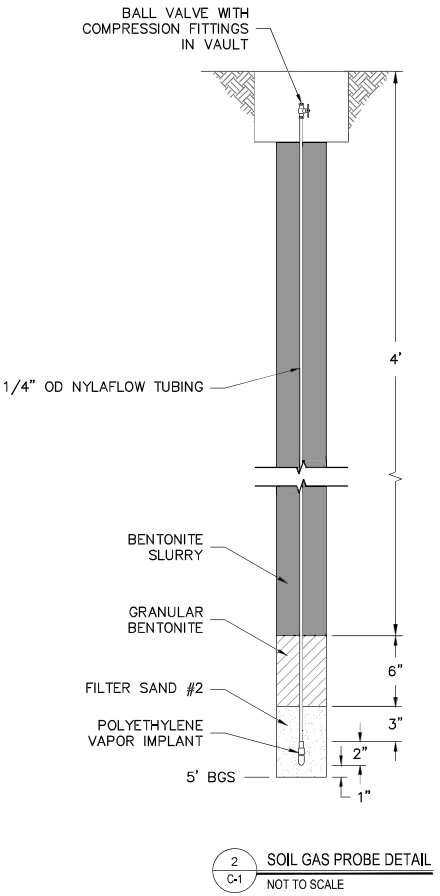
TITLE SHEET 501 ELLIS STREET MOUNTAIN VIEW, CALIFORNIA	SHEET NO. G-1 PROJECT NO. WR0434A DATE: DECEMBER 2012

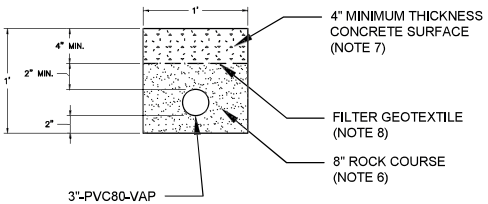


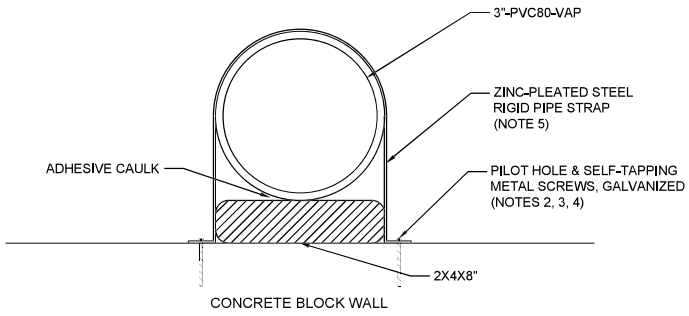
SITE PLAN LAYOUT 501 ELLIS STREET MOUNTAIN VIEW, CALIFORNIA	SHEET NO. C-1 PROJECT NO. WR0434A DATE: DECEMBER 2012

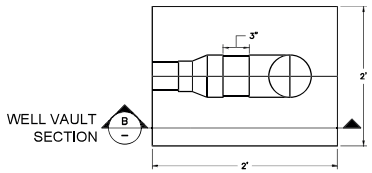
P:\CADD\NEC\WR40434A - SVE\WR0434A.dwg 12-14-12 11:07:08 AM SKhalameyzer

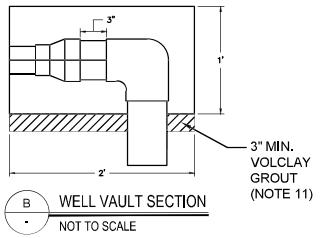












NOTES:

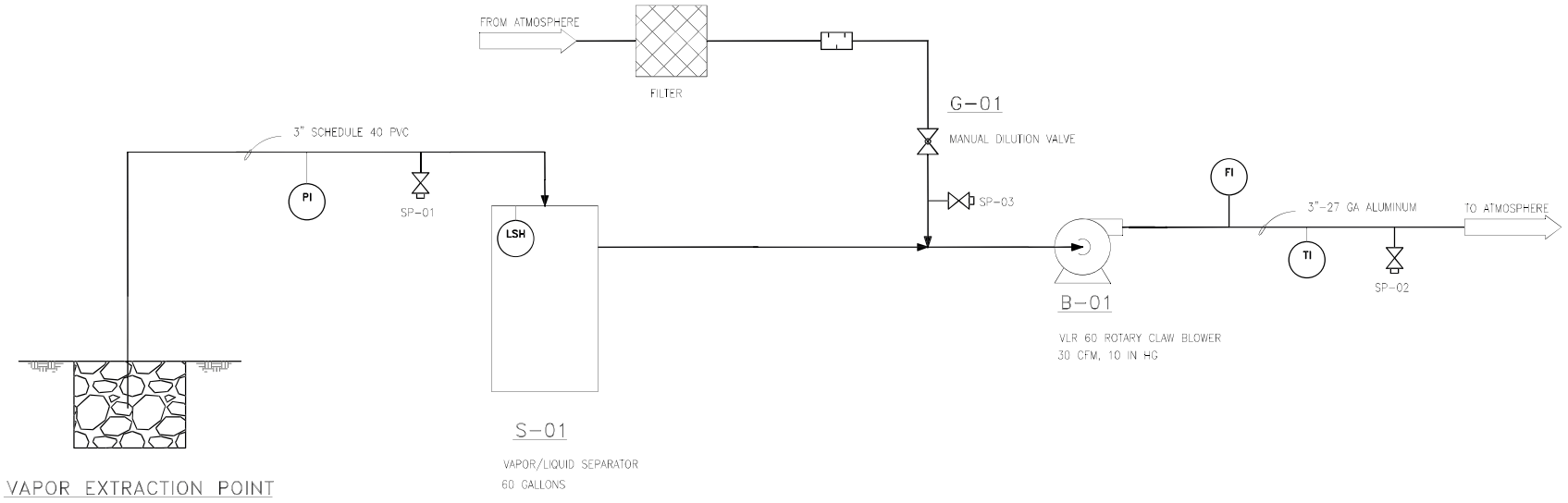
1. SAMPLE PORT CONSISTS OF $\frac{1}{4}$" BALL VALVE WITH COMPRESSION FITTINGS.
2. ANCHOR INSTALLED AT 10-FOOT MINIMUM SPACING.
3. HEX HEAD WEDGE ANCHOR GRADE 5 ZINC PLATED $\frac{5}{16}$"-2 $\frac{1}{2}$" LENGTH.
4. MINIMUM HOLE DEPTH 2 $\frac{3}{4}$".
5. USE 3" DIAMETER ZINC PLATED STRAP 0.25" THICKNESS OR EQUIVALENT.
6. ROCK COURSE SHALL BE $\frac{3}{4}$" CRUSHED ROCK LESS THAN 5% FINES.
7. NEW CONCRETE SHALL BE REINFORCED TO MATCH EXISTING CONCRETE.
8. MIRAFI 160 N OR APPROVED EQUIVALENT. FILTER GEOTEXTILE SHALL BE INSTALLED WITH 1-FT OVERLAP ONTO TOP OF ROCK COURSE.
9. SKID MOUNTED UNIT SHALL BE ANCHORED TO PAVEMENT USING FOUR HILTI KWIK-BOLT TZ, 304SS, 3/8" DIAMETER, 2.5" EMBEDMENT, 3 $\frac{3}{4}$" LENGTH BOLTS. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
10. CLASS 150 FLANGE, MATCH PIPE TYPE AND SIZE.
11. INCLUDE 3" THICK LAYER OF VOLCLAY GROUT BENEATH WELL VAULT.

Geosyntec consultants

EXTRACTION AND OBSERVATION WELL DETAILS
501 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

SHEET NO.	C-2
PROJECT NO.	WR0434A
DATE:	DECEMBER 2012

P:\CADD\NEC\WR0434A - SVE\WR0434A.dwg 12-19-12 03:30:16 PM SKhalameyzer



LEGEND

- PI — PRESSURE INDICATOR
- FI — FLOW INDICATOR
- TI — TEMPERATURE INDICATOR
- LSH — HIGH LEVEL SWITCH
- SILENCER
- SP-01 — SAMPLE PORT

PROCESS FLOW DIAGRAM 501 ELLIS STREET MOUNTAIN VIEW, CALIFORNIA	SHEET NO. P-1 PROJECT NO. WR0434A DATE: DECEMBER 2012

Geosyntec

P:\CADD\NEC\WR40434A - SVE\WR0434A.dwg 12-19-12 04:11:39 PM Skhalameyzer